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ABSTRACT

This packet contains 15 lessons developed in a workplace basic skills project for the metal casting industry established jointly by Central Alabama Community College and Robinson Foundry, Inc. The lessons cover the following topics: (1) green sand schedule; (2) the core room; (3) the core room (continued); (4) figuring time; (5) the cleaning room; (6) the EPS (Evaporated Polystyrene System) process; (7) green sand; (8) EPS-1; (9) EPS-2; (10) grinding production sheet; (11) building and grounds; (12) molding production sheet; (13) forms; (14) grinding production sheet; and (15) vocabulary. Lessons contain information sheets, vocabulary (in some cases), technical information particular to the Robinson Foundry, pretests/posttests with answers, and learning activities for each of the factory processes covered in the lessons. (KC)

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JOBS

A PARTNERSHIP BETWEEN EDUCATION AND INDUSTRY

Central Alabama Community College
&
Robinson Foundry, Inc.

1992

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JOBS

A National Workplace Literacy Project
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JOB
A PARTNERSHIP BETWEEN EDUCATION AND INDUSTRY

CENTRAL ALABAMA COMMUNITY COLLEGE & ROBINSON FOUNDRY, INC.
1992

Robert E. Stone,
Project Director

LESSON I
GREEN SAND SCHEDULE

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1.

In the following lesson on the **Green Sand Schedule** you will learn how to read and understand the schedule of job orders used throughout the Foundry.

First, take the quiz on the next 2 pages to see what you already know.

2.

QUIZ 1

Using the schedule on p. 3, circle the answers you think are correct.

The first one is done for you.

1. How many jobs are scheduled for Floor 3&4?
 a. 7
b. 20
c. 2
2. How many molds should be made for the 1st job on Floor 9&10?
a. 25
b. 184
c. 95

3. What is the flask size for the 1st job on Floor 9&10?

- a. 25x30
- b. 22x22
- c. 30x30

4. What is the class of iron for the 1st job on Floor 5&6?

- a. 20-s
- b. 25
- c. 90

5. What is the casting number for the 1st job on the Hunter?

- a. 121-0035
- b. 300
- c. 20-s

6. How do you know that a job is a Hot Job?

- a. the square has an x through it
- b. the square has a star in it
- c. the square is first on the chart

7. How many jobs are scheduled for the HUNTER?

- a. 8
- b. 25
- c. 31

DAY: Wednesday "135" DATE: 5-15-91 SHIFT: _____

HUNTER	205 300 30A 12-24	KV 55 10162P	SI 25 275 50 101505	Delco 30A 409970X 65357401	Delco 25 10 196C-9280E	CE 25 25 901524	SI 25 250 10 901524	SI 25 250 10 901524	Delco 25 250 10 R-153-E	9	10
BP	30A 300 30A 12-24	SI 35 40162P	Delco 25 20 10162P	Delco 25 100 196C-9280E	CE 25 15 718273	SI 25 15 901524	SI 25 15 901524	Delco 25 125 62803049	Delco 25 125 62803049	12	13
1 & 2	30A 205 30A 12-24	Delco 15 30 10162P	Delco 205 35 32x41 10162P	Delco 30A 4022V9 405925	CE 30B 80 30x30 F-3803	CE 30B 80 30x30 406115	CE 30B 80 32x41 406115	Delco 25 75 32x41 406115	Delco 25 75 32x41 406115	15	16
9 & 10	205 95 22x22 10EP1200	Delco 184 25x20 121-0026	Delco 20A 15 22x22 6448252	Delco 25 10 25x30 9524	SM 25 10 25x30 9524	SM 25 10 25x30 9524	SM 25 10 25x30 9524	Delco 25 10 25x30 9524	Delco 25 10 25x30 9524	18	19
3 & 4	205 400 30 121-0002	Delco 15 25x25 085F1201	Delco 25 10 25x30 52310	Delco 25 35 22x24 308134	CE 25 10 25x30 32410	SM 25 10 25x30 32410	SM 25 10 25x30 32410	Delco 25 10 25x30 905870	Delco 25 10 25x30 905870	21	22
5 & 6	205 90 30x36 262015004	Delco 15 30x30 6280388	Delco 30A 30 30x30 346036	Delco 30A 10 30x30 546047	CE 25 10 30x30 346058	CE 25 10 30x30 346058	CE 25 10 30x30 346058	Delco 25 10 30x30 346058	Delco 25 10 30x30 346058	24	25

NOTES: 718273 - Quantity
 901524 - Surface Terminal Circuit
 901524 - 10
 9524 - Delco Hub Drive

5.

Most trainees don't know all the answers to the quiz you've just taken, but after you work through the lesson on the following pages, you'll know a lot more about the Green Sand Schedule.

At the end of the lesson you'll take the quiz again, and see your scores for both times.

6.

LESSON

On the opposite page is a Green Sand Schedule for the 1st and 2nd shifts, Monday, May 6, 1991. Study the green areas.

In '5/6/91' the '5' means the fifth month, or May.
The '6' means the 6th day, or May 6.
And the last part of '5/6/91' means the year 1991.

7.

DAY: *Monday*

DATE: *5-6-91*

126

SHIFT: *1st + 2nd*

1	2	3	4	5	6	7	8	9	10
H	U	N	T	E	R				
1	2	3	4	5	6	7	8	9	10
B	P								
1 & 2									
3 & 4									
5 & 6									
9 & 10									

NOTES:

8. Each day Nancy Sewell, Production Manager at Robinson, fills in the work for that day. Customers send their orders on an OPOS (Open Purchase Order Status), and Nancy studies the orders and then fills in the Green Sand Schedule.

9.

DAY: <i>Monday</i>	DATE: <i>5-6-91</i>	SHIFT: <i>1st + 2nd</i>
25 HUNTER	25 HUNTER	25 HUNTER
475 817046	475 817046	475 817046
1 B P	1 B P	1 B P
2 1 & 2	2 1 & 2	2 1 & 2
3 3 & 4	3 3 & 4	3 3 & 4
4 5 & 6	4 5 & 6	4 5 & 6
5 9 & 10	5 9 & 10	5 9 & 10
6 9	6 9	6 9
7 10	7 10	7 10
8 11	8 11	8 11
9 12	9 12	9 12
10 13	10 13	10 13
11 14	11 14	11 14
12 15	12 15	12 15
13 16	13 16	13 16
14 17	14 17	14 17
15 18	15 18	15 18
16 19	16 19	16 19
17 20	17 20	17 20
18 21	18 21	18 21
19 22	19 22	19 22
20 23	20 23	20 23
21 24	21 24	21 24
22 25	22 25	22 25

NOTES:

10.

Copies of the day's schedule go to the following departments:

11.

Core Room
Pattern Set-up
Pallet Line
Cleaning Room
Quality Control

12.

The schedule is a chart that shows all the work to be run, together with where jobs will be run.

25

26

DAY: Wednesday

"135" DATE: 5-15-91

13.

SHIFT:

HUNTER	1 205 300 100	2 30A 55 100	3 KV 275 901505	4 30A 300 300	5 30A 300 300	6 30A 300 300	7 30A 300 300	8 30A 300 300	9 30A 300 300	10 30A 300 300
BP	1 30A 300 300	2 30A 300 300	3 30A 300 300	4 30A 300 300	5 30A 300 300	6 30A 300 300	7 30A 300 300	8 30A 300 300	9 30A 300 300	10 30A 300 300
1 & 2	1 30A 300 300	2 30A 300 300	3 30A 300 300	4 30A 300 300	5 30A 300 300	6 30A 300 300	7 30A 300 300	8 30A 300 300	9 30A 300 300	10 30A 300 300
9 & 10	1 30A 300 300	2 30A 300 300	3 30A 300 300	4 30A 300 300	5 30A 300 300	6 30A 300 300	7 30A 300 300	8 30A 300 300	9 30A 300 300	10 30A 300 300
3 & 4	1 30A 300 300	2 30A 300 300	3 30A 300 300	4 30A 300 300	5 30A 300 300	6 30A 300 300	7 30A 300 300	8 30A 300 300	9 30A 300 300	10 30A 300 300
5 & 6	1 30A 300 300	2 30A 300 300	3 30A 300 300	4 30A 300 300	5 30A 300 300	6 30A 300 300	7 30A 300 300	8 30A 300 300	9 30A 300 300	10 30A 300 300

NOTES: 718273 - Square of
 901505 - DuPont Terminal Critical
 901504 - " " " 406115 Check for warp
 9524 - Celco Steel Runway

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14.

Once you know how to use it, a glance at the schedule will tell you what jobs have to be done that day, and in what order.



"135" DATE: 5-15-91

SHIFT: 15.

HUNTER	1 205 300	2 20A 55	3 KV 55	4 SI 275	5 SI 275	6 SI 275	7 SI 275	8 SI 275	9 SI 275	10 SI 275
B P	1 30A 300	2 30A 300	3 SI 55	4 SI 275	5 SI 275	6 SI 275	7 SI 275	8 SI 275	9 SI 275	10 SI 275
1 & 2	1 30A 205	2 30A 15	3 SI 20	4 SI 20	5 SI 20	6 SI 20	7 SI 20	8 SI 20	9 SI 20	10 SI 20
9 & 10	1 30A 205	2 30A 15	3 SI 20	4 SI 20	5 SI 20	6 SI 20	7 SI 20	8 SI 20	9 SI 20	10 SI 20
3 & 4	1 30A 205	2 30A 15	3 SI 20	4 SI 20	5 SI 20	6 SI 20	7 SI 20	8 SI 20	9 SI 20	10 SI 20
5 & 6	1 30A 205	2 30A 15	3 SI 20	4 SI 20	5 SI 20	6 SI 20	7 SI 20	8 SI 20	9 SI 20	10 SI 20

DAY: Wednesday

NOTES: 78273 - Approved
 901504 - Approved Final Critical
 901504 - " " " " 406115 Check for warp
 9524 - Parco Med. Dring

16.

The day is Monday.

The date is June 5, 1991.

The shifts are 1st and 2nd.

What does the number '126' mean? It means that it is the one-hundred-twenty-sixth day of the year.

33

34

DAY: *Monday* DATE: *5-6-91* SHIFT: *1st + 2nd*

17.

1	2	3	4	5	6	7	8	9	10
HUNTER									
1	2	3	4	5	6	7	8	9	10
B P									
1	2	3	4	5	6	7	8	9	10
1 & 2									
1	2	3	4	5	6	7	8	9	10
3 & 4									
1	2	3	4	5	6	7	8	9	10
5 & 6									
1	2	3	4	5	6	7	8	9	10
9 & 10									

NOTES:

18.

On January 8th of next year, the top line will read differently.

The day is Friday.

The date is January 8, 1993.

It is the 8th day of the year.

The shifts are 1st and 2nd.

DAY: *Friday* DATE: *1-8-93* SHIFT: *1st of 2nd*

19.

8

1 H U N T E R	2	3	4	5	6	7	8	9	10
1 B P	2	3	4	5	6	7	11	12	13
1 1 & 2	2	3	4	5	6	7	14	15	16
1 3 & 4	2	3	4	5	6	7	17	18	19
1 5 & 6	2	3	4	5	6	7	20	21	22
1 9 & 10	2	3	4	5	6	7	23	24	25

NOTES:

20.

Castings poured on January 8 will have the number '8' on them, alongside the pattern number.
(Every casting poured on June 6 had the number '126' put alongside the pattern number.)

DAY: *Friday* DATE: *1-8-93* SHIFT: *8* *1st of 2nd*

21.

1	2	3	4	5	6	7	8	9	10
H	U	N	T	E	R				
1	2	3	4	5	6	7	8	9	10
B	P								
1	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10

NOTES: _____

22.

Nancy Sewell writes the day, date, and shift information on the schedule form. She does not have to fill in the molding machines and sections of the the Pallet Line. That information is printed on the blank schedule, making a column down the left hand side.

23.

DAY:	DATE:	SHIFT:
HUNTER	1 2 3 4 5 6 7 8 9 10	10
B P	1 2 3 4 5 6 7 8 9 10 11 12 13	13
1 & 2	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	16
3 & 4	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19	19
5 & 6	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	22
9 & 10	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	25

NOTES:

24.

The work for Pallet Lines 9 & 10 is in the bottom row of boxes.

25.

DAY: *Monday*

DATE: *5-6-91*

126

SHIFT: *1st + 2nd*

1	2	3	4	5	6	7	8	9	10
HUNTER									
1	2	3	4	5	6	7	11	12	13
B P									
1	2	3	4	5	6	7	14	15	16
1 & 2									
1	2	3	4	5	6	7	17	18	19
3 & 4									
1	2	3	4	5	6	7	20	21	22
5 & 6									
1	2	3	4	5	6	7	23	24	25
9 & 10	SM 20 (c) 25 x 30 9804	308 301 (c) 25 x 30 3099-30	30A 65 (c) 25 x 25 63194381	30A 75 (c) 25 x 25 65525093	30A 50 (c) 25 x 25 64948230	30A 65 (c) 25 x 25 10EP1209	BE 7		

NOTES:

26.

The job squares for Pallet Lines 3&4 are filled in on this schedule.

The job farthest to the left -- number 1 -- will be done first, then the others, in order.

The Green Sand Schedule has 7 job squares for Pallet Lines 3&4, but only 4 jobs are filled in here.

27. DATE: 5-6-91 SHIFT: 1st + 2nd
126

1 H U N T L E R	2 O	3 O	4 O	5 O	6 O	7 O	8 O	9 O	10 O
1 B P	2 O	3 O	4 O	5 O	6 O	7 O	11 O	12 O	13 O
1 1 & 2	2 O	3 O	4 O	5 O	6 O	7 O	14 O	15 O	16 O
1 3 & 4	2 O	3 O	4 O	5 O	6 O	7 O	17 O	18 O	19 O
1 5 & 6	2 O	3 O	4 O	5 O	6 O	7 O	20 O	21 O	22 O
1 9 & 10	2 O	3 O	4 O	5 O	6 O	7 O	23 O	24 O	25 O

NOTES:

28.

The HUNTER can do up to 25 jobs, so all the last three columns are used for Hunter jobs.
Thirteen of the Hunter's job squares are filled in on this day.

29.

DAY: Monday

DATE: 5-6-91

SHIFT: 1st + 2nd

126

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
HUNTER	25 817046	SI 25 475	CE 25 90	VHL 30A 212016B	D/100 30B 450	D/100 30B 75	SI 25 150	BE 25 50	GE 25 50	SU 30B 25	SU 30B 25	CE 25 34012	MWH 35													
R			314015	63194010	64997016	904393	09EP1500	368550349AC	34012	474020																
BP																										
1 & 2																										
3 & 4																										
5 & 6																										
9 & 10																										

NOTES:

30.

If you check the Green Sand Schedule once in awhile throughout your shift, you'll notice when jobs are moved ahead.

On this schedule a job has been moved. Now it is to be done before the jobs in squares '4' and '5'.

DAY: Wednesday '135" DATE: 5-15-91 SHIFT: 1st + 2nd

1 H	2 U	3 N	4 T	5 E	6 R	7 	8 	9 	10
1 B	2 P	3 	4 	5 	6 	7 	8 	9 	10
1 1	2 &	3 2	4 	5 	6 	7 	8 	9 	10
1 3	2 &	3 4	4 	5 	6 	7 	8 	9 	10
1 5	2 &	3 6	4 	5 	6 	7 	8 	9 	10
1 9	2 &	3 10	4 	5 	6 	7 	8 	9 	10

205 TASH 25 400 30 x 30
 45 BE 25 25 x 25 095 F/201
 10 25 25 x 36 323/0
 305 54 25 25 x 36 32023
 35 GE 25 20 x 24 (c) 308/34
 10 SM 25 25 x 36 324/0
 105A 30A 51 30 x 30 (c) 905870

NOTES: _____

32.

A starred job is a HOT JOB and has to be done as quickly as possible.

DAY: Wednesday

" 135 " DATE: 5-15-91

33.

HUNTER	205 300	30A 55	51 275	25 225	SI 500	30A 300	30A 500	30A 500	25 250	CE 300	25 250	SI 500	25 250	25 250	25 250	9 10	SHIFT:
	131-0035	40162P	90150S	649970X	65357401	649970X	65357401	65357401	649970X	65357401	649970X	65357401	649970X	65357401	649970X	9 10	SHIFT:
BP	30A 300	30A 300	30A 300	30A 300	30A 300	30A 300	30A 300	30A 300	30A 300	30A 300	30A 300	30A 300	30A 300	30A 300	30A 300	12 13	SHIFT:
	800333	810207	C-116000	359841	402249	359841	402249	402249	359841	402249	359841	402249	359841	402249	402249	12 13	SHIFT:
1 & 2	30A 300	30A 300	30A 300	30A 300	30A 300	30A 300	30A 300	30A 300	30A 300	30A 300	30A 300	30A 300	30A 300	30A 300	30A 300	15 16	SHIFT:
	65197274	15312439	121-0010-10	405925	405925	405925	405925	405925	405925	405925	405925	405925	405925	405925	405925	15 16	SHIFT:
9 & 10	205 100	30A 15	30A 15	30A 15	30A 15	30A 15	30A 15	30A 15	30A 15	30A 15	30A 15	30A 15	30A 15	30A 15	30A 15	18 19	SHIFT:
	10E1210	121-0026	64445252	316459	316459	316459	316459	316459	316459	316459	316459	316459	316459	316459	316459	18 19	SHIFT:
3 & 4	205 300	30A 15	30A 15	30A 15	30A 15	30A 15	30A 15	30A 15	30A 15	30A 15	30A 15	30A 15	30A 15	30A 15	30A 15	21 22	SHIFT:
	121-0002	0851201	323310	37023	37023	37023	37023	37023	37023	37023	37023	37023	37023	37023	37023	21 22	SHIFT:
5 & 6	205 300	30A 15	30A 15	30A 15	30A 15	30A 15	30A 15	30A 15	30A 15	30A 15	30A 15	30A 15	30A 15	30A 15	30A 15	24 25	SHIFT:
	262015004	62803898	346036	346037	346038	346037	346038	346037	346038	346037	346038	346037	346038	346037	346038	24 25	SHIFT:

NOTES: 715273 - Adjusted
 90150S - Adjusted Serial Critical
 901504 - " " " " " 406115 Check for wrap
 9524 - Cocco Herb Beauty " " " " " " " "

34.

You can tell the CLASS OF IRON to be poured for all the jobs.

20-s.....softest iron

25.....regular iron

30-A.....25 class plus 10 lbs steel

30-B (35).....strongest iron

The HUNTER's first job uses regular iron, while the third job for Pallet Line 1&2 uses the strongest iron.

35.

DAY: Monday DATE: 5-6-91 126 SHIFT: 121212

1 H 2 UN T E R	25 475 11 11 11 11	CE 25 90 11 11 11 11	Val 31A 200 11 11 11 11	DECO 30B 450 11 11 11 11	DECO 25 75 11 11 11 11	51 150 11 11 11 11	25 50 11 11 11 11	GE 25 50 11 11 11 11	34 25 11 11 11 11	10 30B 35 11 11 11 11	474020
1 B 2 P	817046	314015	212016B	63194610	64997011	901393	09EP1500	34632340	34012	474020	
1 1 2	Down										
9 10	25 20 11 11 11 11	CE 25 225 11 11 11 11	30A 73 30 11 11 11 11	DECO 30A 100 11 11 11 11	DECO 25 50 11 11 11 11	51 150 11 11 11 11	25 50 11 11 11 11	14 34002	15 09EP1500	16 354270	
9 10	25 20 11 11 11 11	30A 301 11 11 11 11	DECO 30A 65 11 11 11 11	DECO 30A 75 11 11 11 11	DECO 25 50 11 11 11 11	25 65 11 11 11 11	17 65 11 11 11 11	18 34002	19 09EP1500	19 354270	
3 4	25 65 11 11 11 11	CE 25 35 11 11 11 11	DECO 30A 35 11 11 11 11	DECO 30A 5 11 11 11 11	DECO 25 50 11 11 11 11	25 5 11 11 11 11	20 5 11 11 11 11	21 34002	22 09EP1500	22 354270	
5 6	25 65 11 11 11 11	BE 25 75 11 11 11 11	DECO 30A 20 11 11 11 11	DECO 30A 45 11 11 11 11	DECO 25 50 11 11 11 11	25 45 11 11 11 11	23 45 11 11 11 11	24 34002	25 09EP1500	25 354270	

NOTES: 405925-BHN 187-241-Check Fer Ward

36.

The CUSTOMER NAME is abbreviated. For instance, 'VUL' is short for Vulcan, and 'SI' is an abbreviation for Siemens.

Baldour Electric Co.	BE	Little Giant Pump Co.	LGP
Brown Machine	BM	Louis Allis	LA
BTR Precision Die Casting	BTR	M&H Valve	M&H
Caterpillar Inc.	CAT	Mueller Co.	MUELL
Century, Inc.	CE	Pneumotive	PNEU
Clow Valve Co.	CLOW	Reliance Electric	RE
Cloyes Gear	Cloy	Roper Pump Co.	RP
Conine Manufacturing Co.	CON	Siemens	SI
Delavan Products	DEL	Toshiba International	TOSH
Delco Products Division, GMC	DELCO	Texsteam Products	TXT
Dupage Precision Products	DUPAGE	Union Foundry	UF
Fairbanks Morse Pump Corp.	FMP	US Electrical Motors	USEM
Ford Meter Box Co., Inc.	FMB	Vulcan Engineering	Vu
G&E Machine Works, Inc.	G&E	Wilton Corp.	WIL
General Electric. -DCM&G	GE	Watts/Muesco	Watts
Genicom Corp.	GENI		
Gravelly Corp.	GRAV		
Grinnell Corp	GRIN		
Harvey Engineering & Mfg.	HAR		
Hennessy Ind., Inc.	Henn		
J&B Industrial Services	J&B		
John Deere Dubuque Works	JD		
Kennedy Valve	KV		

73

74

37.

DAY:	Monday		DATE: 5-6-91		126		SHIFT: 1-1-2nd							
HUNTER	25 475	511 25	CE ²⁵ 90	Val ¹ 200	Delco ⁵ 450	30B 75	Delco ⁶ 150	51 101	25 50	CE ⁹ 50	25 50	34 ¹⁰ 30B	11-1 35	
B P	817046	214015	212016 B	63194010	64997011	901393	09EP1502	34012	474620					
1 & 2	25 20	51 20	Delco ³ 225	CE ⁴ 73	51 100	30A 30x30	901623	63196008	405925	904357	7 25	BE ¹¹ 50	25 50	CE ¹² 135
9 & 10	25 20	51 20	Delco ³ 301	Delco ⁴ 65	51 75	30A 25x25	41804	3099-30	6319438	65525083	7 25	Delco ⁶ 50	22x22	22x22
3 & 4	3A 65	CE ² 35	SM ² 30	BE ³ 35	25 5	25x36	240551-02	32401	09SE1700	32210	6 25	Delco ⁵ 50	22x22	64948230
5 & 6	25 6	BE ² 75	BE ³ 20	BE ⁴ 20	SM ⁵ 45	25x30	11EP1704	18FH100	HH6307	33112	6 25	BE ⁶ 50	25x36	20x30

NOTES: 405925-BHN 187-241 - Check For Warp

38.

The green part of the schedule this time shows the **NUMBER OF MOLDS** to be poured. The biggest job is the first one for the HUNTER.

DAY:	Monday		DATE: 5-6-91		126		SHIFT: 1st 2nd														
HUNTER	25 475	511 25	CE 90	25 200	Val 30A	450	30B 75	Delco 25	150 101	51 101	25 50	BE 25	50	25 50	GE 25	50	25 50	54 30B	35	M=H	
B P	817046	214015	212016 B	63194610	64997011	908393	09EP1502	34017	474620	09EP1502	34002	09EP1502	354270	09EP1502	354270	09EP1502	354270	09EP1502	354270	09EP1502	354270
1 & 2	20	225	73	100	30A	30 x 30 904357	30 x 30 405925	30A	30 x 30 904357	30A	30 x 30 904357	30A	30 x 30 904357	30A	30 x 30 904357	30A	30 x 30 904357	30A	30 x 30 904357	30A	30 x 30 904357
9 & 10	20	301	65	75	Delco	25 x 25 63194381	25 x 25 63194381	Delco	25 x 25 63194381	Delco	25 x 25 63194381	Delco	25 x 25 63194381	Delco	25 x 25 63194381	Delco	25 x 25 63194381	Delco	25 x 25 63194381	Delco	25 x 25 63194381
3 & 4	65	35	35	5	BE	25 x 25 240551-02	25 x 25 240551-02	BE	25 x 25 240551-02	BE	25 x 25 240551-02	BE	25 x 25 240551-02	BE	25 x 25 240551-02	BE	25 x 25 240551-02	BE	25 x 25 240551-02	BE	25 x 25 240551-02
5 & 6	75	75	20	45	BE	30 x 30 14EP1704	30 x 30 14EP1704	BE	30 x 30 14EP1704	BE	30 x 30 14EP1704	BE	30 x 30 14EP1704	BE	30 x 30 14EP1704	BE	30 x 30 14EP1704	BE	30 x 30 14EP1704	BE	30 x 30 14EP1704

NOTES: 405925- BHN 187-241 - Check for Warp

40.

If you see a 'c' in the bottom bracket -- [c] -- the casting requires a CORE to be placed inside the mold.

If there is no [c], the casting does not require a CORE.

41.

DAY: Monday DATE: 5-6-91 SHIFT: 126

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25			
HUNTER	25 475 S11 25	25 90 CE 25	25 200 VUL 30A	25 450 DELO 30B	25 75 DELO 25	25 150 S1 101	25 50 BE 25	25 50 GE 25	25 50 BE 25	25 50 BE 25	25 50 BE 25	25 50 BE 25	25 50 BE 25	25 50 BE 25	25 50 BE 25	25 50 BE 25	25 50 BE 25	25 50 BE 25	25 50 BE 25	25 50 BE 25	25 50 BE 25	25 50 BE 25	25 50 BE 25	25 50 BE 25	25 50 BE 25	25 50 BE 25	25 50 BE 25	
B P	817046	214015	212016 B	63194610	64997014	906393	09EP1507	36017	36017	36017	36017	36017	36017	36017	36017	36017	36017	36017	36017	36017	36017	36017	36017	36017	36017	36017	36017	36017
1 & 2	25 20 S11 30A	25 225 DELO 30B	25 25 CE 25	25 100 S1 30A	25 100 DELO 25	25 100 S1 30A	25 100 DELO 25	25 100 S1 30A	25 100 DELO 25	25 100 S1 30A	25 100 DELO 25	25 100 S1 30A	25 100 DELO 25	25 100 S1 30A	25 100 DELO 25	25 100 S1 30A	25 100 DELO 25	25 100 S1 30A	25 100 DELO 25	25 100 S1 30A	25 100 DELO 25	25 100 S1 30A	25 100 DELO 25	25 100 S1 30A	25 100 DELO 25	25 100 S1 30A	25 100 DELO 25	
9 & 10	25 20 S11 30B	25 301 DELO 30A	25 65 S1 30A	25 75 DELO 30A	25 75 DELO 25	25 65 S1 30A	25 65 S1 30A	25 65 S1 30A	25 65 S1 30A	25 65 S1 30A	25 65 S1 30A	25 65 S1 30A	25 65 S1 30A	25 65 S1 30A	25 65 S1 30A	25 65 S1 30A	25 65 S1 30A	25 65 S1 30A	25 65 S1 30A	25 65 S1 30A	25 65 S1 30A	25 65 S1 30A	25 65 S1 30A	25 65 S1 30A	25 65 S1 30A	25 65 S1 30A	25 65 S1 30A	25 65 S1 30A
3 & 4	25 65 S11 30A	25 35 DELO 30A	25 35 S1 30A	25 5 S1 30A	25 5 S1 30A	25 5 S1 30A	25 5 S1 30A	25 5 S1 30A	25 5 S1 30A	25 5 S1 30A	25 5 S1 30A	25 5 S1 30A	25 5 S1 30A	25 5 S1 30A	25 5 S1 30A	25 5 S1 30A	25 5 S1 30A	25 5 S1 30A	25 5 S1 30A	25 5 S1 30A	25 5 S1 30A	25 5 S1 30A	25 5 S1 30A	25 5 S1 30A	25 5 S1 30A	25 5 S1 30A	25 5 S1 30A	25 5 S1 30A
5 & 6	25 6 S11 30B	25 75 DELO 30A	25 20 S1 30A	25 45 S1 30A	25 45 S1 30A	25 45 S1 30A	25 45 S1 30A	25 45 S1 30A	25 45 S1 30A	25 45 S1 30A	25 45 S1 30A	25 45 S1 30A	25 45 S1 30A	25 45 S1 30A	25 45 S1 30A	25 45 S1 30A	25 45 S1 30A	25 45 S1 30A	25 45 S1 30A	25 45 S1 30A	25 45 S1 30A	25 45 S1 30A	25 45 S1 30A	25 45 S1 30A	25 45 S1 30A	25 45 S1 30A	25 45 S1 30A	25 45 S1 30A

NOTES: 405925-BHN 187-241 - Check For Warp

42.

These numbers tell you what FLASK SIZE to use to mold this casting.

(The HUNTER molds only the FLASK SIZE that is built into it.)

85

86

DAY: Monday DATE: 5-6-91 126 SHIFT: 1-1-20A

HUNTER	25 475	25 90	25 200	25 450	25 75	25 150	25 50	25 50	25 25	25 35
B P	817046	214015	212016A	63194610	64907014	904393	09EP1500	364503990	34017	474600
1 & 2	25 20	25 225	25 73	25 100	25 30x30	25 904357	25 50	25 50	25 50	25 135
9 & 10	25 20	25 301	25 65	25 75	25 25x25	25 65525083	25 50	25 50	25 50	25 135
3 & 4	25 65	25 35	25 35	25 5	25 25x36	25 32210	25 50	25 50	25 50	25 50
5 & 6	25 65	25 75	25 20	25 45	25 25x36	25 33112	25 50	25 50	25 50	25 50

ONES: 405925 - BHN 187-241 - Check For Ward

2 5

44.

Each square shows the PATTERN NUMBER.

90

89

DAY: Monday DATE: 5-6-91 SHIFT: 1st 2nd

1 HUNTER	25 475 511/25 30B	25 90 Val 30A	25 200 Val 30A	25 450 Delco 30B	25 150 51 30B	25 50 BE 30B	25 50 GE 30B	25 25 54 30B	25 35 M=H
2 BP	817046 214015	212016B	63194010	64997011	906393	09EP1502	348523890	34012	476620
3 & 4	20 25 x 30 901623	225 25 x 30 63196008	73 30 x 30 405925	100 30 x 30 904357	65 25 x 25 6319438	301 25 x 30 3099-30	30 25 x 36 32401	50 25 x 36 32210	135 25 354272
5 & 6	65 30 x 30 240551-02	35 25 x 25 095F1202	20 25 x 36 5FH1001	5 25 x 36 32210	65 22 x 22 64948230	30 25 x 30 33112	50 25 x 36 32210	50 25 09EP1502	35 25 354272

NOTES: 405925-BHN 187-241 - Check For Warp

46.

If the top brackets have 'SO' written in them -- [SO] -- that means 'SPECIAL ORDER'. Look below at the notes section of the schedule to see how the order is special.

DAY:	Monday		DATE:	5-6-91		126	SHIFT:	1-1-2-1A	
HUNTER	25 5112 475	25 200	25 75	25 150	25 50	25 50	25 25	25 25	25 35
B P	817046	214015	212016A	63194010	64997011	901393	09EP1502	26652399A0	34012
1 & 2	25 20	25 225	25 25x30	25 25x30	25 25x30	25 25x30	25 25x30	25 25x30	25 25x30
9 & 10	25 20	25 30	25 25x30	25 25x30	25 25x30	25 25x30	25 25x30	25 25x30	25 25x30
3 & 4	25 65	25 35	25 25x30	25 25x30	25 25x30	25 25x30	25 25x30	25 25x30	25 25x30
5 & 6	25 75	25 20	25 25x30	25 25x30	25 25x30	25 25x30	25 25x30	25 25x30	25 25x30

OTES: 405925-BHN 187-241 - Check for Warf

48.

This schedule shows a number of SPECIAL ORDERS. The notes can be matched to job squares by matching up pattern numbers.

DAY: Wednesday

"135" DATE: 5-15-91

49.

SHIFT:

HUNTER	10	9	8	7	6	5	4	3	2	1	0	SHIFT:
205	300	325	500	51	Delco	25	25	25	25	51	51	9
131-0035	4N162P	901505	6499706	65357401	11100-9280E	901504	901504	901504	R-153-E	25	51	10
302	302	302	302	302	302	302	302	302	302	302	302	11
BP	100	175	15	718273	402249	718273	402249	718273	402249	718273	402249	12
1 & 2	75	80	80	80	80	80	80	80	80	80	80	13
9 & 10	10	10	10	10	10	10	10	10	10	10	10	14
3 & 4	45	45	45	45	45	45	45	45	45	45	45	15
5 & 6	10	10	10	10	10	10	10	10	10	10	10	16
	25	25	25	25	25	25	25	25	25	25	25	17
	30	30	30	30	30	30	30	30	30	30	30	18
	35	35	35	35	35	35	35	35	35	35	35	19
	40	40	40	40	40	40	40	40	40	40	40	20
	45	45	45	45	45	45	45	45	45	45	45	21
	50	50	50	50	50	50	50	50	50	50	50	22
	55	55	55	55	55	55	55	55	55	55	55	23
	60	60	60	60	60	60	60	60	60	60	60	24
	65	65	65	65	65	65	65	65	65	65	65	25

NOTES: 718273 - Adjustment
 901505 - Adjusted Fancl Critical
 901504 - Oil
 9524 - Cisco Hub Drivers

50. The Green Sand Schedule will keep you on top of what work is to be done when.
The following questions will help you review what we've covered so far.

52.

Directions: Choose the correct answer.
Write the letter of your answer in
the blank.

The first one is done for you.

1. This is a a .
 - a. green sand schedule
 - b. lost foam schedule
 - c. SPC chart
2. The number '20' will be printed
alongside the pattern number on _____.
 - a. castings poured on molding machine
number 20
 - b. castings poured on January 20
 - c. castings poured from the softest iron
3. HUNTER jobs are filled in on the _____
of the Green Sand Schedule.
 - a. bottom line
 - b. top line
 - c. middle line

4. An arrow drawn from one square to in
in front of other squares means that _____.

- a. the job is explained on the QPOS
- b. the job is a special order
- c. the job is to be done earlier than it was
scheduled.

5. The special order note for the job square
with pattern number 718273 _____.

- a. is explained in the note for 406115
- b. is explained in the note for 718273
- c. is explained in the note for 901505

6. The customer abbreviation 'FMB' means
the job is for _____.

- a. Ford Meter Box Company
- b. Siemens
- c. Boldour Electric Co.

**The correct answers are on the next
two pages.**

DAY: Wednesday "135" DATE: 5-15-91 53. SHIFT:

10 HUNTER	10-11 300 (C) 55 (C)	KV 300	3 25	SI 375 (C)	3 25	30A 300	30A 10	30A 25	30A 300	30A 25	30A 10	30A 25	30A 10	30A 25	30A 10	30A 25	30A 10	30A 25	30A 10	30A 25	30A 10	30A 25	30A 10	30A 25
9 BP	121-0035 40620P	40620P	3 25	SI 20	3 25	30A 100	30A 125	30A 15	30A 149970N 65357401	30A 25	30A 10	30A 25	30A 10	30A 25	30A 10	30A 25	30A 10	30A 25	30A 10	30A 25	30A 10	30A 25	30A 10	30A 25
8 1 & 2	131-0035 40620P	40620P	3 25	SI 20	3 25	30A 100	30A 125	30A 15	30A 149970N 65357401	30A 25	30A 10	30A 25	30A 10	30A 25	30A 10	30A 25	30A 10	30A 25	30A 10	30A 25	30A 10	30A 25	30A 10	30A 25
7 9 & 10	10EPI210 121-0026	10EPI210	3 25	SI 15	3 25	30A 45	30A 75	30A 80	30A 200B 676	30A 25	30A 10	30A 25	30A 10	30A 25	30A 10	30A 25	30A 10	30A 25	30A 10	30A 25	30A 10	30A 25	30A 10	30A 25
6 3 & 4	121-0002 0851201	0851201	3 25	SI 10	3 25	30A 300	30A 35	30A 30	30A 300	30A 25	30A 10	30A 25	30A 10	30A 25	30A 10	30A 25	30A 10	30A 25	30A 10	30A 25	30A 10	30A 25	30A 10	30A 25
5 5 & 6	262015004 6250388	6250388	3 25	SI 30	3 25	30A 25	30A 10	30A 10	30A 300	30A 25	30A 10	30A 25	30A 10	30A 25	30A 10	30A 25	30A 10	30A 25	30A 10	30A 25	30A 10	30A 25	30A 10	30A 25

NOTES: 765273 - ~~40620P~~
 9015205 = Auditor General Critical
 9015204 - 011 " 406115 Check for wrap
 9524 - Cisco Aud. Manual
 106

54.

ANSWERS

1.
 - a. This is the correct answer.
 - b. There is a Lost Foam Schedule, and a DISA Schedule, but they are different from this one.
 - c. SPC (Statistical Process Control) charts are used at Robinson, but this is the Green Sand Schedule.
2.
 - b. This is the correct answer.
3.
 - a. The '20' means the 20th day of the year.
 - c. The '20' means the 20th day of the year.
 - b. This is the correct answer.
 - a. Read the column along the left hand side of the paper to see which machine or pallet lines the jobs match up with.
 - c. Read the column along the left hand side of the paper to see which machine or pallet lines the jobs match up with.

55.

4. c. This is the correct answer.
 - a. All jobs are explained on the OPOS (Open Purchase Order Status), but that has nothing to do with the arrow and star.
 - b. Special Order jobs are shown by 'SO' written in the brackets, but that has nothing to do with the arrow and star.
5. b. This is the correct answer.
 - a. Match the pattern number (718273) to the number next to the note.
 - c. Match the pattern number (718273) to the number next to the note.
6. a. This is the correct answer.
 - b. The abbreviation for Siemens is 'SI'.
 - c. The abbreviation for Baldour Electric is 'BE'.
7. b. This is the correct answer.
 - a. The customer name appears in abbreviated form in the upper right hand corner of each job square.
 - c. The number of moldings appears in the center oval on each job square.

56.

Focus on a single job square

Now let's look closely at a single job square, and review what each part tells us. First, we know that this is the first job for Pallet Lines 3&4 on Wednesday, May 15, 1991.

DAY: Wednesday

"135" DATE: 5-15-91

57.

SHIFT:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
HUNTER	205 300 KV	205 300 KV	205 275 SI	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV
BP	121-0035 40162P	121-0035 40162P	121-0035 40162P	121-0035 40162P	121-0035 40162P	121-0035 40162P	121-0035 40162P	121-0035 40162P	121-0035 40162P	121-0035 40162P	121-0035 40162P	121-0035 40162P	121-0035 40162P	121-0035 40162P	121-0035 40162P	121-0035 40162P	121-0035 40162P	121-0035 40162P	121-0035 40162P	121-0035 40162P	121-0035 40162P	121-0035 40162P	121-0035 40162P	121-0035 40162P	121-0035 40162P
1 & 2	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV
9 & 10	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV
3 & 4	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV
5 & 6	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV	205 300 KV

NOTES: 715273 - Accepted
 901505 - Autolite Terminal Critical
 901504 - 011 " 40415 Check for wiring
 9524 - Casco Hub Drive 113

58.

We know that the class of Iron is 20-S
The company is TOSH.
There is a core [c] in the mold.

115

116

DAY: Wednesday "135" DATE: 5-15-91

HUNTER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	SHIFT:	
	205 300 10	30A 55 10	KV 55 10	SI 275 10	SI 275 10	SI 275 10	SI 275 10	SI 275 10	SI 275 10	SI 275 10	SI 275 10	SI 275 10	SI 275 10	SI 275 10	SI 275 10	SI 275 10	SI 275 10	SI 275 10	SI 275 10	SI 275 10	SI 275 10	SI 275 10	SI 275 10	SI 275 10	SI 275 10	SI 275 10	
B P	131-0035 40167P	40167P	901505	649970X 65357401	649970X 65357401	649970X 65357401	649970X 65357401	649970X 65357401	649970X 65357401	649970X 65357401	649970X 65357401	649970X 65357401	649970X 65357401	649970X 65357401	649970X 65357401	649970X 65357401	649970X 65357401	649970X 65357401	649970X 65357401	649970X 65357401	649970X 65357401	649970X 65357401	649970X 65357401	649970X 65357401	649970X 65357401	649970X 65357401	
1 & 2	205 154 22x22	205 154 22x22	205 154 22x22	205 154 22x22	205 154 22x22	205 154 22x22	205 154 22x22	205 154 22x22	205 154 22x22	205 154 22x22	205 154 22x22	205 154 22x22	205 154 22x22	205 154 22x22	205 154 22x22	205 154 22x22	205 154 22x22	205 154 22x22	205 154 22x22	205 154 22x22	205 154 22x22	205 154 22x22	205 154 22x22	205 154 22x22	205 154 22x22	205 154 22x22	
9 & 10	205 184 22x22	205 184 22x22	205 184 22x22	205 184 22x22	205 184 22x22	205 184 22x22	205 184 22x22	205 184 22x22	205 184 22x22	205 184 22x22	205 184 22x22	205 184 22x22	205 184 22x22	205 184 22x22	205 184 22x22	205 184 22x22	205 184 22x22	205 184 22x22	205 184 22x22	205 184 22x22	205 184 22x22	205 184 22x22	205 184 22x22	205 184 22x22	205 184 22x22	205 184 22x22	205 184 22x22
3 & 4	205 440 30x30	205 440 30x30	205 440 30x30	205 440 30x30	205 440 30x30	205 440 30x30	205 440 30x30	205 440 30x30	205 440 30x30	205 440 30x30	205 440 30x30	205 440 30x30	205 440 30x30	205 440 30x30	205 440 30x30	205 440 30x30	205 440 30x30	205 440 30x30	205 440 30x30	205 440 30x30	205 440 30x30	205 440 30x30	205 440 30x30	205 440 30x30	205 440 30x30	205 440 30x30	205 440 30x30
5 & 6	205 90 30x30	205 90 30x30	205 90 30x30	205 90 30x30	205 90 30x30	205 90 30x30	205 90 30x30	205 90 30x30	205 90 30x30	205 90 30x30	205 90 30x30	205 90 30x30	205 90 30x30	205 90 30x30	205 90 30x30	205 90 30x30	205 90 30x30	205 90 30x30	205 90 30x30	205 90 30x30	205 90 30x30	205 90 30x30	205 90 30x30	205 90 30x30	205 90 30x30	205 90 30x30	205 90 30x30

NOTES: 7/15/273 - Spangol
 901505 - Anticell Finish Critical
 901504 - U-11
 9524 - Cisco Med. Building
 464115 Check for wrap

60.

The flask size is 30 x 30.
The pattern number is 121-0002.
The order is to make 400 molds.

119

120

DAY: Wednesday

" 135 " DATE: 5-15-91

61.

SHIFT:

	1	2	3	4	5	6	7	8	9	10
HUNTER	205 300	205 35	205 30	205 35	205 30	205 30	205 30	205 30	205 30	205 30
	131-0035 H0162P	10162P H0162P	901505	901505	901505	901505	901505	901505	901505	901505
B P	300	300	300	300	300	300	300	300	300	300
	131-0035 H0162P	10162P H0162P	901505	901505	901505	901505	901505	901505	901505	901505
	205 184	205 15	205 10	205 10	205 10	205 10	205 10	205 10	205 10	205 10
1 & 2	205 22x22	205 22x20	205 22x20	205 22x20	205 22x20	205 22x20	205 22x20	205 22x20	205 22x20	205 22x20
	10EP1310 121-0026	10EP1310 121-0026	10EP1310 121-0026	10EP1310 121-0026	10EP1310 121-0026	10EP1310 121-0026	10EP1310 121-0026	10EP1310 121-0026	10EP1310 121-0026	10EP1310 121-0026
9 & 10	205 95	205 184	205 15	205 15	205 15	205 15	205 15	205 15	205 15	205 15
	205 22x22	205 22x20	205 22x20	205 22x20	205 22x20	205 22x20	205 22x20	205 22x20	205 22x20	205 22x20
	10EP1310 121-0026	10EP1310 121-0026	10EP1310 121-0026	10EP1310 121-0026	10EP1310 121-0026	10EP1310 121-0026	10EP1310 121-0026	10EP1310 121-0026	10EP1310 121-0026	10EP1310 121-0026
3 & 4	205 440	205 45	205 10	205 10	205 10	205 10	205 10	205 10	205 10	205 10
	205 30x20	205 25x25	205 25x30	205 25x30	205 25x30	205 25x30	205 25x30	205 25x30	205 25x30	205 25x30
	121-0002 095F201	121-0002 095F201	121-0002 095F201	121-0002 095F201	121-0002 095F201	121-0002 095F201	121-0002 095F201	121-0002 095F201	121-0002 095F201	121-0002 095F201
5 & 6	205 90	205 15	205 30	205 30	205 30	205 30	205 30	205 30	205 30	205 30
	205 30x36	205 30x20	205 30x20	205 30x20	205 30x20	205 30x20	205 30x20	205 30x20	205 30x20	205 30x20
	262015004 6280388	262015004 6280388	262015004 6280388	262015004 6280388	262015004 6280388	262015004 6280388	262015004 6280388	262015004 6280388	262015004 6280388	262015004 6280388

NOTES: 715273 - 135
901505 - 135
901505 - 135
9524 - 135

Check for wrap
 406115
 121

62.

In this case, the job is ~~of~~ Hot Job. Pallet Lines 3&4 have to do this job.

7

DAY: Wednesday

"135" DATE: 5-15-91

63.

SHIFT:

	10	9	8	7	6	5	4	3	2	1	0
HUNTER		25 250 10 10	25 250 10 10	25 250 10 10	25 250 10 10	25 250 10 10	25 250 10 10	25 250 10 10	25 250 10 10	25 250 10 10	25 250 10 10
B P											
1 & 2											
9 & 10											
3 & 4											
5 & 6											

(Note: The table contains handwritten data including call numbers, shift numbers, and symbols like 'X' and 'D' in circles. Some cells are crossed out with an 'X' or a 'D' in a circle.)

NOTES: 715273 - [unclear]

901504 - [unclear]

901504 - [unclear]

9524 - [unclear]

446115 Check for wrap

125

126

64.

The class of iron is 25.
The company is SI.
There is a core in the mold.

127

128

65.

"135" DATE: 5-15-91


DAY: Wednesday

SHIFT:

HUNTER	10-11 320	30A 55	KV 55	3 ZS 275	SI 50 10	Delco 20A 10	6 ZS 25	CE 11 25	7 ZS 25	SI 50 250	8 ZS 250	9 ZS 250	10 O
B P	131-0035	40163P	40163P	901505	16P 20	Delco 447 125	5 ZS 100	CE 11 15	7 ZS 15	SI 50 125	11 ZS 125	12 O	13 O
1 & 2	500333	810207	810207	C-11600	106 35	Delco 106 75	5 ZS 75	CE 11 50	7 ZS 50	SI 50 75	14 ZS 75	15 O	16 O
9 & 10	205	184	25x20	22x22	105 15	Delco 105 10	5 ZS 10	CE 11 50	7 ZS 50	SI 50 10	18 ZS 10	19 O	20 O
3 & 4	10EP1310	121-0026	121-0026	64445252	316459	Delco 30A 45	5 ZS 45	CE 11 25	7 ZS 25	SI 50 25	21 ZS 25	22 O	23 O
5 & 6	262015004	62803788	62803788	346036	346037	Delco 30A 10	5 ZS 10	CE 11 25	7 ZS 25	SI 50 10	24 ZS 10	25 O	26 O

NOTES: 715273 - delco
 901505 - Delco Terminal Critical
 901504 - Delco
 9524 - Delco
 40615 Check for wrap
 129

66.

The order is to make  molds.
The flask size is 25 x 36.
The pattern number is 32410.

DAY: Wednesday "135" DATE: 5-15-91 67.

SHIFT:

1 HUNTER ZOS 200 10 10 10 10	2 30A 55 10 10 10 10	3 KV 55 10 10 10 10	4 SL 75 10 10 10 10	5 30A 10 10 10 10 10	6 Delta 10 10 10 10 10	7 CE 25 10 10 10 10	8 ZS 25 10 10 10 10	9 51 25 10 10 10 10	10 51 25 10 10 10 10	11 ZS 25 10 10 10 10	12 Delta 125 10 10 10 10	13 30B 125 10 10 10 10	14 62803049 10 10 10 10 10	15 CE 75 10 10 10 10	16 30B 75 10 10 10 10	17 30B 75 10 10 10 10	18 Delta 75 10 10 10 10	19 Delta 75 10 10 10 10	20 Delta 75 10 10 10 10	21 Delta 75 10 10 10 10	22 Delta 75 10 10 10 10	23 Delta 75 10 10 10 10	24 Delta 75 10 10 10 10	25 Delta 75 10 10 10 10
---	--	---------------------------------------	---------------------------------------	--	--	---------------------------------------	---------------------------------------	---------------------------------------	--	--	--	--	--	--	---	---	---	---	---	---	---	---	---	---

NOTES: 715223 - Approved
 901505 - Approved General Clinical
 901504 - 011
 9524 - Perio Med Review
 406115 Check for wrap

69.

The following questions will help you review the information about job squares.

70.

Questions about job squares.

Directions

Look at the enlarged job square on the opposite page. Choose the correct answer. Write the letter of your answer in the blank.

The first one is done for you.

1. The class of iron is a.
 - a. 30-A
 - b. (125)
 - c. 63197787
 2. The company is _____.
 - a. [c]
 - b. TOSH
 - c. DELCO
 3. Is there a core in the mold? _____.
 - a. yes
 - b. no
 - c. can't tell
5. The pattern number is _____.
 - a. 63197787
 - b. (125)
 - c. 30-A
 6. The order is to make _____.
 - a. (125) molds
 - b. 25 x 30 molds
 - c. 63197787 molds

71.

<u>30A</u>	<u>De/ko</u>
$\frac{25}{\underline{\quad}} \times \frac{30}{\underline{\quad}}$	$\frac{125}{\underline{\quad}} \times \frac{30}{\underline{\quad}}$
63197787	$[]$ $[c]$

When you have finished, check your answers with those on the next two pages.

72.

ANSWERS

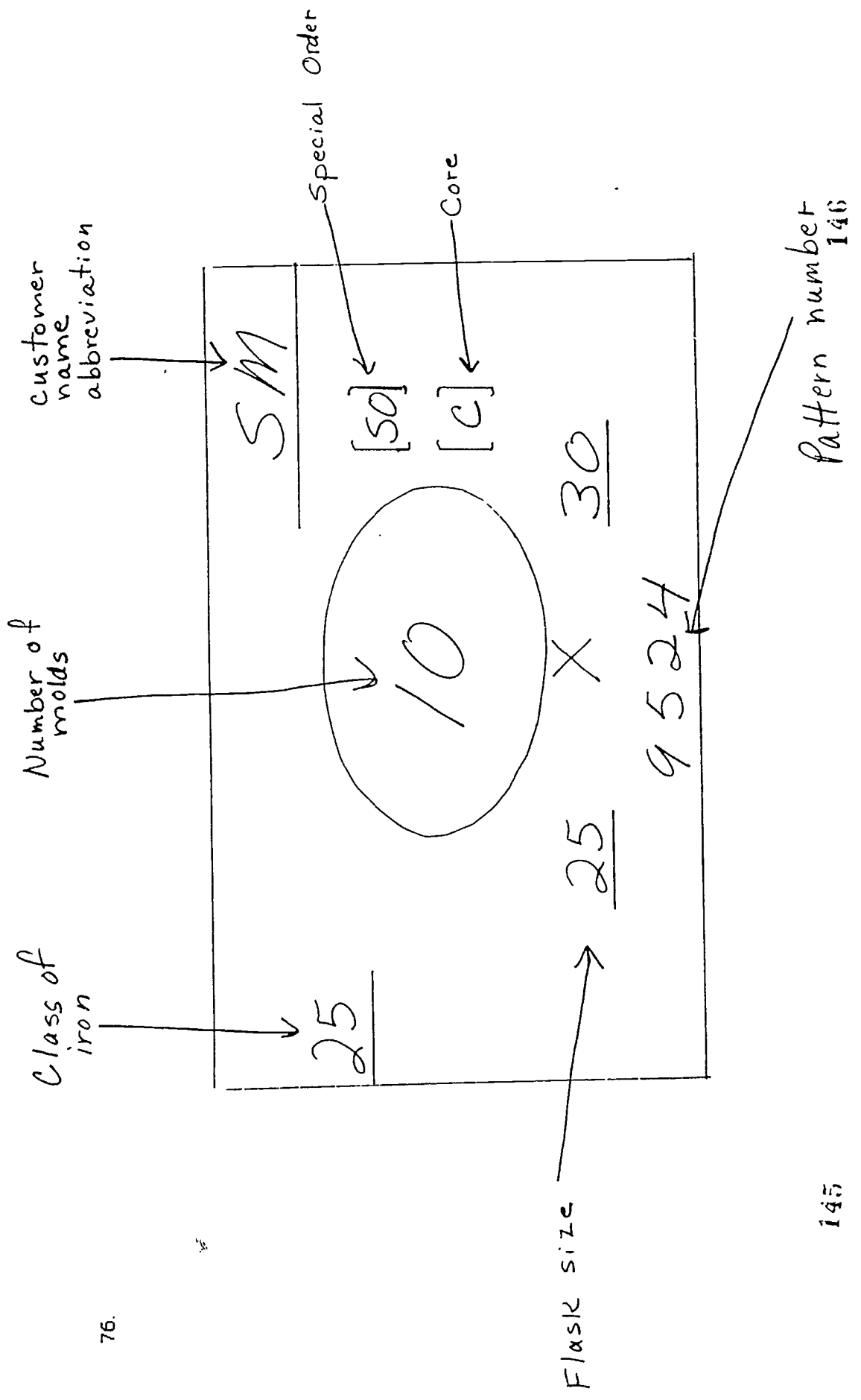
Questions about job squares

1. a. This is the correct answer.
b. 125 molds are to be poured.
c. 63197767 is the pattern number.
2. c. This is the correct answer.
a. [c] means there is a core in the mold.
b. TOSH is the abbreviation of Toshiba International Corp.
3. a. This is the correct answer.
b. [c] means there is a core in the mold.
c. [c] means there is a core in the mold.
4. b. This is the correct answer.
a. 125 molds are to be made.
c. 63197767 is the pattern number.
5. a. This is the correct answer.
b. 125 molds are to be made.
c. 30-A is the class of iron.
6. a. This is the correct answer.
b. 25x30 is the flask size.
c. 63197767 is the pattern number.

73.

<u>30A</u>	<u>Delco</u>
	[]
	[c]
	/ 25
	X
	<u>25</u>
	<u>30</u>
	63197787

76.



77.

You have completed the lesson.

Go on to the next page to retake the quiz you started this booklet with, or go back and review the lesson before retaking the quiz.

76.

QUIZ 2

Using the schedule on p. 79, circle the answers you think are correct.

The first one is done for you.

1. How many jobs are scheduled for Floor 3&4?
 a. 7
 b. 20
 c. 2
2. How many molds should be made for the 1st job on Floor 9&10?
 a. 25
 b. 184
 c. 95

3. What is the flask size for the 1st job on Floor 9&10?

- a. 25x30
- b. 22x22
- c. 30x30

4. What is the class of iron for the 1st job on Floor 5&6?

- a. 20-s
- b. 25
- c. 90

5. What is the casting number for the 1st job on the Hunter?

- a. 121-0035
- b. 300
- c. 20-s

6. How do you know that a job is a Hot Job?

- a. the square has an x through it
- b. the square has a star in it
- c. the square is first on the chart

7. How many jobs are scheduled for the HUNTER?

- a. 8
- b. 25
- c. 31

DAY: Wednesday

79.

SHIFT:

" 135 " DATE: 5-15-91

10	9	8	7	6	5	4	3	2	1
	51 250 R-153-E	51 250 901524	CE 25 116C-2-2-3-RE	Delta 25 10	CE 25 100	Delta 25 375	51 250 901505	Delta 25 15	Delta 25 184
	13 208 62803049	7 25 718273	Delta 25 15	Delta 25 125	CE 25 75	Delta 25 10	Delta 25 70	Delta 25 35	Delta 25 15
	16 208 62803049	14 25 718273	Delta 25 80	Delta 25 75	Delta 25 75	Delta 25 45	Delta 25 15	Delta 25 15	Delta 25 15
	19 208 62803049	7 25 718273	Delta 25 80	Delta 25 75	Delta 25 75	Delta 25 45	Delta 25 15	Delta 25 15	Delta 25 15
	22 208 62803049	7 25 718273	Delta 25 80	Delta 25 75	Delta 25 75	Delta 25 45	Delta 25 15	Delta 25 15	Delta 25 15
	25 208 62803049	7 25 718273	Delta 25 80	Delta 25 75	Delta 25 75	Delta 25 45	Delta 25 15	Delta 25 15	Delta 25 15

NOTES: 718273 - Delta
 901505 - Delta
 901524 - Delta
 Delta

81.

Check the next page for the correct answers to the quiz.

153

154

82.

ANSWERS

1. How many jobs are scheduled for Floor 3&4?
a. 7
b. 20
c. 2
2. How many molds should be made for the 1st job on Floor 9&10?
a. 25
b. 184
c. 95
3. What is the flesh size for the 1st job on Floor 1&2?
a. 25x30
b. 22x22
c. 30x30
4. What is the class of iron for the 1st job on Floor 5&6?
a. 20-s
b. 25
c. 90
5. What is the casting number for the 1st job on the Hunter?
a. 121-0035
b. 300
c. 20-s
6. How do you know that a job is a Hot Job?
a. the square has an X through it
b. the square has a star in it
c. the square is first on the chart
7. How many jobs are scheduled for the HUNTER?
a. 8
b. 25
c. 31

JOB

A PARTNERSHIP BETWEEN EDUCATION AND INDUSTRY

**CENTRAL ALABAMA COMMUNITY COLLEGE & ROBINSON FOUNDRY, INC.
1992**

LESSON 2 THE CORE ROOM

**ROBERT E. STONE
PROJECT DIRECTOR
205 234 6346**

**WRITTEN BY:
SANDRA MANN,
INSTRUCTOR/COUNSELOR
205 329 8481 EXT. 81**

In the following lesson on the **CORE ROOM** you will learn about the two kinds of cores used at Robinson Foundry.

First, take the quiz on the next page to see what you already know.

CORE ROOM QUIZ 1

DIRECTIONS

Circle the answer you think is correct.

The first one is done for you.

1. How is sand made into a core?
 - a. It is sifted and packed into a core box.
 - b. It is rammed and packed into a core box.
 - (c.) It is chemically bonded and packed into a core box.

2. Why are cores put in castings?
 - a. To make the surface finish good.
 - b. To make the outside dimensions accurate.
 - c. To make a hollow space inside the casting.

3. How are Airset cores made?
 - a. They are made with chemically bonded sand which hardens when air hits it.
 - b. They are made with chemically bonded sand which hardens when the heat of a cast iron core box activates the resin.

4. How can you tell if a Shell core is strong?
 - a. Weigh it
 - b. Look at the color.
 - c. Measure it.

5. How can you tell Airset and Shell cores apart by color?
 - a. Airset is yellow and brown; Shell is off-white.
 - b. Airset is off-white; Shell is yellow and brown.

6. If you needed cores that were good for detail and dimensional accuracy, which would you pick?
 - a. Airset
 - b. Shell

Most trainees don't know all the answers to the quiz you've just taken, but after you read the passages and answer the questions on the following pages, you'll know a lot more about the **CORE ROOM**.

At the end of the lesson you'll take a quiz and see your scores for both times.

CORE ROOM

The Core Room makes the cores needed for Green Sand castings. Sand is chemically bonded together and packed into a core box to form a shape. The shape, or core, is placed inside the green sand mold. When molten iron is poured into the mold, the sand part does not fill up. Instead, there is a hollow shape inside the casting in the exact shape of the core.

There are two processes used in the production of packed sand cores. One process makes an Airset core. The other process makes a Shell core.

****ANSWER THE FOLLOWING QUESTIONS****

DIRECTIONS

Chose the correct answer. Circle the letter of your answer.

1. What is the passage mostly about?
 - a. How cores are made.
 - b. Core set-up for Green Sand Castings.
 - c. Airset cores.

2. What are the two types of cores made in the core room?
 - a. Bonded and Packed.
 - b. Airset and Shell.
 - c. Molten and Hollow.

3. Why are cores needed in casting?
 - a. To make a hollow space inside a casting.
 - b. To make gating for Green Sand molds.
 - c. To chemically bond sand.

CHECK YOUR ANSWERS ON THE NEXT PAGE.

ANSWERS

1. a. This answer is correct.
 - b. This is not mentioned in the passage.
 - c. Airset is mentioned; however, the passage talks about more information than just airset cores.

2. b. This answer is correct.
 - a. Bonded and packed are words describing how cores are made. They do not name the two types of cores.
 - c. Molten is a word which is used to describe iron. It is not about cores. Hollow is used to tell the shape of the inside of a shell core. It is not the type of core.

3. a. This answer is correct.
 - b. This is not mentioned in the passage.
 - c. To chemically bond sand is how cores are made, not why they are needed in castings.

Airset

Airset cores harden when air hits them. They are made from chemicals and sand grains mixed together and heated in the mixing machines.

Airset sand is mixed in two different-sized mixing machines. The 150 mixer prepares sand for the smaller cores. The chemical balance and temperature help the sand mixture harden quickly.

The 300 mixer prepares sand for larger cores. The sand from the 300 machine sets slower because the cores are so much bigger.

Airset cores are solid. They are generally made in bodies which are glued together at the glue-up table. The glue seams are sealed to keep the hot iron from melting the glue seam.

Airset cores are off-white in color. They are generally not designed for use in castings that need a good surface finish or a high degree of dimensional accuracy. They tend to swell as they set up. The swelling can make the dimensions of the castings be wrong and can cause defects.

Shell Core

Shell cores are made of resin coated sand. Heat bonds the grains of sand. The sand comes to Robinson with the resin already added.

Shell cores are made in machines which have cast iron core boxes. An operator fills the core box with sand. The heat of the core box activates the resin and bonds the sand to make a core.

Shell cores can be solid or hollow. If the core is not heated long enough, there will be a hole in the bottom. Any un-bonded sand will drain out and leave a hollow core.

The color of the Shell core is an indicator of its quality. The darker the Shell core is "cooked" without burning it black, the stronger the core will be. The strongest core is a dark brown.

Shell cores are good for castings requiring detail and dimensional accuracy.

****ANSWER THE FOLLOWING QUESTIONS****

DIRECTIONS

Choose the correct answer. Circle the letter of your answer.

1. After reading the passage about Airset and Shell cores, you should be able to the difference between the cores by looking at the...
 - a. size
 - b. color
 - c. shape

2. If you needed cores that were good for detail and dimensional accuracy, you would pick...
 - a. Airset cores
 - b. Shell cores

3. If you needed a very strong Shell core, which would you pick?
 - a. A light yellow one
 - b. An off-white one
 - c. A dark brown one

4. Casting Number 9804 needs a hollow core. Which would you send to the Green Sand Pallet line?
 - a. Airset
 - b. Shell

5. Core Number 405926 is a very large Airset core. Which sand mixer would you use to make this core?
 - a. 150
 - b. 300

6. If you put resin-coated sand in a heated cast iron core box, what would you get?
 - a. An Airset core
 - b. A Shell core

7. After reading the lesson about the Core Room you should know that cores are...
 - a. only mixed in the 300 machine.
 - b. made from chemically bonded sand.
 - c. always solid.

CHECK YOUR ANSWERS ON THE NEXT PAGE.

Answers

1. b. This answer is correct.
 - a. The passage does not mention the size of the cores.
 - b. The passage does not mention the shape of the cores.
2. b. This answer is correct.
 - a. Read the last paragraph about Airset Cores. You will learn why airset cores are good for detail and dimensional accuracy.
3. c. This answer is correct.
 - a. Read the passage about Shell cores. It explains that the strongest Shell cores are dark brown.
 - b. Airset cores are off-white.
4. b. This answer is correct.
 - a. Airset cores are solid.
5. b. This answer is correct.
 - a. The 150 machine makes small cores.
6. b. This answer is correct.
 - a. Airset sand does not have resin. Airset sand is heated and mixed in a mixing machine, not a core box.
7. b. This answer is correct.
 - a. The 300 machine is only for large Airset, not all cores.
 - c. Airset cores are solid, but Shell cores are hollow.

FOCUS ON VOCABULARY

As you were reading the lesson, did you find words you didn't know? You could have gone to the dictionary to find the meaning of the strange word.....OR you could have guessed the word by looking at the other words around it.

This is called "looking at the **CONTEXT** of a word".

CONTEXT is the rest of the sentence or paragraph.

Let's look at a sentence from the lesson and see if you can figure out the meaning of an underlined word by looking at the rest of the sentence.

"When molten iron is poured into the mold, the sand part does not fill up."

In the sentence, molten is in front of iron. It is telling you what kind of iron is being used.

The next part of the sentence tells you that iron is poured into the mold.

You should ask yourself, "What form does iron have to be if you have to pour it?"

Your answer should be, "A liquid!"

You have figured out that molten means liquid iron. You did that by looking at the rest of the sentence and asking yourself questions.

Now, try your new skill with the questions on the next page!

DIRECTIONS

Choose the correct answer. Circle the letter of your answer.

1. What is the meaning of generally in the sentence below?

Airset cores are generally not used in castings that need a high degree of dimensional accuracy.

- a. most of the time
- b. having high rank
- c. belonging to all persons

2. What is the meaning of bonded in the sentence below?

Sand is chemically bonded together and packed into a core box to form a shape.

- a. a written agreement
- b. stuck together
- c. a note of debt that is due

3. What is the meaning of activates in the sentence below?

The heat of the core box activates the resin and bonds the sand to make a core.

- a. to place on active military duty
- b. to cause something to start working

4. What is the meaning of indicator in the sentence below?

The color of a Shell core is an indicator of its quality.

- a. a pointer on an instrument
- b. something that points out or makes known
- c. a by-product

5. What is the meaning of process in the sentence below?

One process makes an Airset core.

- a. court summons
- b. lines of things moving along
- c. a way of doing something

CHECK YOUR ANSWERS ON THE NEXT PAGE.

ANSWERS

1. a. This answer is correct.
 - b. Rank has nothing to do with castings or dimensional accuracy.
 - c. The sentence is not about people or ownership.
2. b. This is the correct answer.
 - a. A bond can be a written agreement; however, in the sentence bonded is before the word together. The word is not used to talk about an agreement.
 - b. A bond can be a debt that is due; however, in the sentence bonded is not used to talk about debt. It is used to show how sand is put together to make a core.
3. b. This answer is correct.
 - A. The word activates is used to show what the heat of the core box does. Military duty is not discussed in the sentence.
4. b. This is the correct answer.
 - a. An indicator can be a pointer on an instrument; however, the sentence does not discuss instruments.
 - b. The color of a Shell core shows how good it is. The color is not a by-product.
5. c. This answer is correct.
 - a. A court summons can be processed; however, it has nothing to do with making Airset cores.
 - b. A line of things moving along has nothing to do with making Airset cores.

You have completed the lesson.

Go on to the next page to retake the quiz you started this booklet with, or go back and review the lesson before taking the quiz.

CORE ROOM QUIZ 2

DIRECTIONS

Circle the answer you think is correct.

The first one is done for you.

1. How is sand made into a core?
 - a. It is sifted and packed into a core box.
 - b. It is rammed and packed into a core box.
 - (c.) It is chemically bonded and packed into a core box.

2. Why are cores put in castings?
 - a. To make the surface finish good.
 - b. To make the outside dimensions accurate.
 - c. To make a hollow space inside the casting.

3. How are Airset cores made?
 - a. They are made with chemically bonded sand which hardens when air hits it.
 - b. They are made with chemically bonded sand which hardens when the heat of a cast iron core box activates the resin.

4. How can you tell if a Shell core is strong?
 - a. Weigh it
 - b. Look at the color.
 - c. Measure it.

5. How can you tell Airset and Shell cores apart by color?
 - a. Airset is yellow and brown; Shell is off-white.
 - b. Airset is off-white; Shell is yellow and brown.

6. If you needed cores that were good for detail and dimensional accuracy, which would you pick?
 - a. Airset
 - b. Shell

Check the next page for the correct answers to the quiz.

ANSWERS

1. This one is done for you.
2. c. This answer is correct.
 - a. Airset cores are not used in castings that need a good surface finish; therefore, this cannot be the correct answer.
 - b. The reading passage does not mention outside dimensions.
3. a. This answer is correct.
 - b. This is how Shell cores are made.
4. b. This is the correct answer.
 - a. The passage does not mention weighing castings.
 - b. The passage does not mention measuring castings.
5. b. This answer is correct.
 - a. Read the parts of the passage which tells about the color of each shell.
6. b. This is the correct answer.
 - a. Read the passage about Airset cores. They swell as they set up. This can make a casting have a defect.

JOB

A PARTNERSHIP BETWEEN EDUCATION AND INDUSTRY

**CENTRAL ALABAMA COMMUNITY COLLEGE & ROBINSON FOUNDRY, INC.
1992**

LESSON 3 THE CORE ROOM

**ROBERT E. STONE,
PROJECT DIRECTOR
205 234 6346**

**WRITTEN BY:
BETH MAXWELL,
INSTRUCTOR
205 329 8481 EXT. 81**

174

CORE ROOM

WORD LIST

1. CORE
2. MOLD
3. FLASK
4. SAND
5. CASTING
6. GREEN SAND
7. EPS
8. FINS

CORE ROOM

Willie works in the core room. He helps make cores to go inside a mold. The molds are placed in a flask. The sand in the mold makes the form of the casting. The casting comes from Green Sand or EPS process. Fins are found on some castings.

Circle the following words in the passage:

1. core
2. mold
3. flask
4. sand
5. casting
6. Green Sand
7. EPS
8. fins

CORE ROOM

Willie works in the _____ room. He helps make _____ to go inside a _____. The _____ are placed in a _____. The _____ in the _____ makes the form of the _____. The _____ comes from _____ or _____ process. _____ are found on some _____.

Word List:

1. core
2. mold
3. flask
4. sand
5. casting
6. Green Sand
7. EPS
8. fins

Fill in the missing letters:

c__re
c__ __e
c__r__
__ __ re
co__ __

M__LD
M__ __D
M__ L__
__ __LD
MO__ __

F__N
F__ __
FI__
__ __N
F__N

s__nd
s__ __d
s__n__
__ __nd
sa__ __

DE__E__T
D__F__C__T
DEF__ __
__ __ __ECT
DEFE__ __

CA__ __IN__
__ __ __TI__ __
C__ST__N__
C__S__I__G
CAST__ __ __

E__S
__ __ S
E__ __
E P__
__ P__

F__A__K
__ __ASK
FLA__ __
FL__SK
FL__ __K

SC__ __P
S__R__P
S__ __ __P
SC__ __ __
__ __ __AP

core
mold
scrap
sand
fin
blast
slag
safety
EPS
casting
defect
flask
accident
pattern

care
mold
scrape
sand
fan
blend
slag
safe
EPS
case
defect
flake
accident
path

core
mill
scrap
send
fin
blast
sling
safety
EPC
casting
defeat
flask
accurate
pattern

cure
mild
script
sand
find
blow
slag
sift
EPS
cast
defeact
fact
accident
petals

core
mild
scrap
sun
fin
blast
slight
safety
EPT
casting
deflate
flask
occur
pattern

Words -- circle the matching words.

PREACTIVITY FOR A to Z

1. _____ st
2. b _____ d
3. j k _____
4. x _____ z
5. m n _____
6. _____ f g
7. o p _____
8. h _____ j
9. p _____ r
10. _____ v w
11. a b _____
12. _____ j k
13. d _____ f
14. _____ x y
15. g h _____
16. s _____ u
17. n _____ p
18. e f _____
19. h i _____
20. t u _____

PREACTIVITY FOR ALPHABETICAL ORDER

- 1. FLASK 1. _____
- 2. ACCIDENT 2. _____
- 3. CORE 3. _____
- 4. SAND 4. _____
- 5. PATTERN 5. _____

- 1. MOLD 1. _____
- 2. SLAG 2. _____
- 3. FIN 3. _____
- 4. EPS 4. _____
- 5. CASTING 5. _____

- 1. DEFECT 1. _____
- 2. SCRAP 2. _____
- 3. BP 3. _____
- 4. SAFETY 4. _____
- 5. HAMMER 5. _____

FIND THE DEPARTMENTS ON THE MAP

1. Personnel and Lab
2. Supply
3. Cleaning Room
4. Shipping
5. Pattern Shop
6. Iron Melting
7. EPS
8. Green Sand
9. Disa
10. Core Room
11. Storage
12. Storage
13. Maintenance
14. Security

Find the Core Room
and Color Yellow.

Pattern
Shop

Cleaning
Room

Personnel
and
Lab

EPS

Green
Sand

Disa.

Core
Room

JOBS

A PARTNERSHIP BETWEEN EDUCATION AND INDUSTRY

**CENTRAL ALABAMA COMMUNITY COLLEGE & ROBINSON FOUNDRY, INC.
1992**

LESSON 4 FIGURING TIME

**ROBERT E. STONE
PROJECT DIRECTOR
205 234 6346**

**WRITTEN BY:
SANDRA MANN,
INSTRUCTOR/COUNSELOR
205 329 8481 EXT. 81**

In the following lesson on **Figuring Time** you will learn how to work with time problems.

First, take the quiz on the next page to see what you already know.

TIME PROBLEMS-QUIZ 1

1. Jessie Tolison's shell core machine broke down for 44 minutes and was out of sand for 10 minutes. The power was off for 17 minutes. What is his total DOWN TIME for that day?
 - a. 1 hour and 5 minutes
 - b. 1 hour and 11 minutes
 - c. 75 minutes
 - d. none of the above

2. Derrick Spivey worked 2 hours and 37 minutes overtime on Monday and 1 hour 53 minutes overtime on Tuesday. How much is his OVER TIME for both days?
 - a. 4 hours and 30 minutes
 - b. 3 hours and 87 minutes
 - c. 3 hours and 60 minutes
 - d. None of the above

3. At 6:51 the Melt Deck ran out of iron. James McCoy needed to pour castings but he has to wait for iron. It's 8:10 before he got any iron. How long did he wait?
 - a. 1 hour and 45 minutes
 - b. 2 hours
 - c. 1 hour and 19 minutes
 - d. none of the above

4. Celso Cruz works from 10:35 pm to 6:15 am every day. How many hours is he at work?
 - a. 7 hours and 40 minutes
 - b. 6 hours and 35 minutes
 - c. 8 hours and 10 minutes
 - d. none of the above

5. Howard Marcantel goes to work at 4:40 am and gets off at 1:15 pm. He takes 45 minutes for lunch and takes two 10 minute GatorAde breaks. How many hours a day does he actually work?
 - a. 7 hours and 50 minutes
 - b. 8 hours
 - c. 7 hours and 30 minutes
 - d. none of the above

6. Jay Edmondson goes to work at 4:10 am and works 9 hours and 15 minutes. What is his quitting time?
 - a. 1:45 pm
 - b. 2:30 pm
 - c. 1:25 pm
 - d. none of the above

TIME PROBLEMS AT ROBINSON FOUNDRY

An important job skill is to be able to fill out the occupational forms used in your department. Many occupational forms are used to record the amount of work which has been done in a certain amount of time.

These forms are called PRODUCTION FORMS. In order to correctly fill out production forms, you must be able to write clock time.

If your work is stopped for some reason, you have to write the amount of DOWN TIME. This means you must be able to add and subtract time.

This booklet will show you quick and easy ways to figure time problems in your work.

ADDING TIME

Here is an example of writing DOWN TIME on a Robinson production form:

Suppose your molding machine broke down for 15 minutes. Then the power went off for 12 minutes. Next, you took a break for 10 minutes.

What will you write for your total DOWN TIME?

Add the minutes together like this

15 minutes	
12 minutes	
10 minutes	←
—	
37 minutes	

NOW TRY THIS ONE!

It takes you 40 minutes to eat lunch. You take two 10 minute breaks. You are out of iron for 35 minutes.

What will you write for TOTAL DOWN TIME?

Add the minutes like this:

$$\begin{array}{r} 40 \text{ minutes} \\ 10 \quad " \\ 10 \quad " \\ + 35 \quad " \\ \hline 95 \text{ minutes} \end{array}$$

95 minutes is the right answer---however---you must write DOWNTIME in hours and minutes.

Look below to see how to do this:

Divide the minutes by 60 (minutes in an hour).

$$\begin{array}{r} 1 \text{ -----> number of hours} \\ 60 \overline{) 95} \\ \underline{- 60} \\ 35 \text{ -----> number of minutes} \end{array}$$

You would write 1 hour and 35 minutes for DOWN TIME.

Change these minutes into hours and minutes:

- a. 85 _____
- b. 76 _____
- c. 92 _____
- d. 147 _____
- e. 65 _____

CHECK YOUR ANSWERS ON THE NEXT PAGE

ANSWERS

- a. 1 hour and 25 minutes
- b. 1 hour and 16 minutes
- c. 1 hour and 32 minutes
- d. 2 hour and 27 minutes
- e. 1 hour and 5 minutes

If you do not understand why these answers are correct,
ask your teacher for help.

MORE ADDING PROBLEMS

Suppose you worked overtime 3 afternoons this week. You worked 1 hour and 25 minutes on Monday. You worked 2 hours and 10 minutes on Tuesday. You worked 1 hour and 15 minutes on Wednesday.

How can you find out the total amount of overtime you have worked this week?

DO IT LIKE THIS

$$\begin{array}{r} 1:25 \\ 2:10 \\ + 1:15 \\ ---- \\ 4:50 \end{array}$$

****You worked 4 hours and 50 minutes****

LET'S TRY ANOTHER PROBLEM

Suppose you worked 1 hour and 45 minutes overtime on Monday.
Then you worked 1 hour and 45 minutes overtime on Tuesday.

How much time did you have in overtime pay?

*** If you add your time like this ***

$$\begin{array}{r} 1:45 \\ + 1:45 \\ \hline 2:90 \end{array}$$

Your answer is correct,
but it just doesn't look right!

Your minutes have added up to more than an hour.
WHAT DO YOU DO NOW?

Divide the minutes by 60 (minutes in an hour)

$$\begin{array}{r} 1 \text{-----} \rightarrow 1 \text{ hour and } 30 \text{ minutes} \\ 60 \overline{) 90} \\ \underline{-60} \\ \text{---} \\ 30 \end{array}$$

Now add 1 hour and 30 minutes to 2:00

$$\begin{array}{r} 2:00 \\ + 1:30 \\ \text{----} \\ 3:30 \end{array}$$

*** You have 3 hours and 30 minutes in overtime pay! ***

SUBTRACTING TIME

Let's do problems with subtracting time.

The Muller breaks down at 10:47 am. You can't run your molding machine without sand. The Muller isn't fixed until 11:15 am.

How much DOWN TIME should you write on the Molding production sheet?

*** You could write the problem like this ***

$$\begin{array}{r} 11:15 \\ - 10:47 \\ \hline \end{array}$$

But that won't work!
You can't subtract 47 from 15.

Look at the problem worked like this:

$$\begin{array}{r} \text{Borrow an hour} \quad 11:15 \\ - 1:00 \\ \hline 10:15 \end{array}$$

Change the hour to 60 minutes and add back to 10:15

$$\begin{array}{r} 10:15 \\ + :60 \\ \hline 10:75 \end{array}$$

NOW you can subtract 10:47 and find the DOWN TIME.

$$\begin{array}{r} 10:75 \\ - 10:47 \\ \hline :28 \end{array}$$

*** You will write 28 minutes as your DOWN TIME. ***

Let's do a few more of these problems

1. You work in the cleaning room at a grinding booth. Today Roy Watts sent you a pallet of castings with the number 63196008. You start grinding at 2:43. By 5:06 you only had 5 castings ground.

How long did it take you to do that work?

- a. 3 hours and 5 minutes
- b. 2 hours and 23 minutes
- c. 1 hour and 47 minutes
- d. none of the above

(Did you remember to "borrow" 60 minutes?)

2. You work in EPS Assembly. Rick Johnson brings you a box of foam patterns to assemble. You begin at 7:00 am. Normally, you get through with this box by 7:50 am. Today you work until 8:23 am.

How much extra time did you spend working on this box?

- a. 45 minutes
- b. 1 hour and 23 minutes
- c. 33 minutes
- d. none of the above

CHECK YOUR ANSWERES ON THE NEXT PAGE

ANSWERS

1. The correct answer is b. Work the problem like this:

Step 1. $5:06$ You can't subtract this problem.
 $\underline{-2:43}$

Step 2. You have to borrow an hour from 5:06.

$$\begin{array}{r} 5:06 \\ -1:00 \\ \hline 4:06 \end{array}$$

Step 3. Change the hour to 60 minutes and add it back to 4:06

$$\begin{array}{r} 4:06 \\ + :60 \\ \hline 4:66 \end{array}$$

Step 4. **NOW** you can subtract 2:43 from 4:66 and find the time.

$$\begin{array}{r} 4:66 \\ - 2:43 \\ \hline 2:23 \end{array}$$

Step 5. Write the answer as 2 hours and 23 minutes.

2. The correct answer is c. Work the problem like this:

Step 1. Set up the problem.

$$\begin{array}{r} 8:23 \\ - 7:50 \\ \hline \end{array}$$

Step 2. Change 8:23 by borrowing an hour and adding it back as 60 minutes.

$$\begin{array}{r} 8:23 \\ - 1:00 \\ \hline 7:23 \end{array} \quad \text{Then do this:} \quad \begin{array}{r} 7:23 \\ + :60 \\ \hline 7:83 \end{array}$$

Step 3. **NOW** you can subtract and find the extra time.

$$\begin{array}{r} 7:83 \text{ new finishing time} \\ - 7:50 \text{ normal finishing time} \\ \hline 33 \text{ minutes extra time spent of the box.} \end{array}$$

Let's look at another problem involving SUBTRACTING TIME.

Suppose you work from 6:15 am to 2:00 pm.

How long are you at work?


*** You could write the problem like this. ***

$$\begin{array}{r} 2:00 \text{ pm} \\ - 6:15 \text{ am} \\ \hline \text{?} \end{array}$$

But that won't work!
You can't subtract a large number from a smaller number.

TRY THIS

Change your quitting time to a number that is large enough to allow you to subtract your starting time. You can do that by adding your quitting time to 12:00 noon...just like this.

$$\begin{array}{r} 12:00 \text{ noon} \\ + 2:00 \text{ pm (quitting time)} \\ \hline 14:00 \text{ pm (NEW quitting time)} \end{array}$$


*** NOW write the problem like this ***

$$\begin{array}{r} 14:00 \text{ pm} = \text{(don't forget to borrow)} = 13:60 \text{ pm} \\ - 6:15 \text{ am} \qquad \qquad \qquad - 6:15 \text{ am} \\ \hline \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \hline 7:45 \end{array}$$

You are at work 7 hours and 45 minutes!

TRY IT AGAIN!

1. You go to work in EPS at 8:05 am. You get off early at 1:15 pm.

How many hours did you work today?

- a. 5 hours and 10 minutes
- b. 5 hours and 20 minutes
- c. 4 hours and 55 minutes
- D. none of the above

2. You start work in the Core Room at 4:43 am and quit work at 1:25.

How long did you work today?

- a. 9 hours and 10 minutes
- b. 8 hours and 42 minutes
- c. 8 hours and 18 minutes
- d. none of the above

3. You are working overtime at the Cleaning Room. You start work at 4:10 am and you regularly get off at 12:15 pm. However, today you work until 2:23 pm. Answer the following questions about your time at work:

- (a) How many hours did you work today?
- (b) How many hours do you work without overtime?
- (c) How much overtime did you work today?

CHECK YOUR ANSWERS ON THE NEXT PAGE

ANSWERS

1. The correct answer is a.
2. The correct answer is b.
3. The correct answer is:
 - a. 10 hours and 13 minutes
 - b. 8 hours and 5 minutes
 - c. 2 hours and 8 minutes

If you do not understand why these answers are correct, ask your teacher for help.

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OTHER TIME PROBLEMS

Let's look at another type of time problem. Sam Huntley came to work at 7:10 am. He hid behind the Core Room and took 35 minutes to eat 2 steak biscuits. He watched Robert Angle rake leaves for 30 minutes. He hid in Annette's office for 15 minutes and drank a cup of coffee. He went home at 2:45 pm.

How many hours did Sam actually work today?

DO IT LIKE THIS

Add the "goof-off" time---->

	35 minutes
	30 "
+ 15 "	
--	
80 "	

Change 80 minutes to hours and minutes----> 1 hour and 20 minutes

Find how long Sam was at Robinson--->

(1)

	2:45 (quitting time)
+ 12:00 noon	

14:45	(new quitting time)

(2)

	14:45 (new quitting time)
- 7:10 (starting time)	

7:35	Hours at Robinson

Subtract the DOWNTIME (the "goof-off" time) from the hours he was at Robinson----->

	7:35 (hours he was at Robinson)
- 1:20 ("goofing-off" time)	

6:15	

Sam actually worked 6 hours and 15 minutes!

Let's look at another TIME PROBLEM.

1. If you go to work at 6:10 am and work 8 hours, what will be your quitting time?

DO IT LIKE THIS:

step 1. 6:10 am (starting time)
 + 8:00 (hours at work)

 14:10 pm (quitting time)

step 2. 14:10 pm
 -12:00 noon

 2:10 pm (quitting time in clock time)

Your quitting time is 2:10!

TRY THIS ONE!

You come into EPS at 5:30 and start work. Joe Clark comes by and tells you that you have to work 10 hours and 45 minutes today.

This is fine with you because you need the extra overtime; however, you carry riders in your car. They only have to work 8 hours today.

1. What time will you tell your riders that you will be leaving work?
 - a. 3:76 pm
 - b. 2:45 pm
 - c. 4:15 pm

2. If your riders went to work at 5:30 and worked 8 hours, how long will they have to wait for you after they get off work?
 - a. 2 hours and 45 minutes
 - b. 3 hours
 - c. 4 hours and 15 minutes

CHECK YOUR ANSWERS ON THE NEXT PAGE

ANSWERS

1. The correct answer is b.
2. The correct answer is a.

If you do not understand why these answers are correct, ask your teacher for help.

You have completed the lesson.

Go to the next page to take a practice quiz to see how well you have learned to figure time.

Check your answers to see if you need to review the lesson before you take the last quiz.

TIME PROBLEMS Practice Quiz

1. James Baggett's molding machine broke down for 27 minutes. The Muller stopped for 35 minutes and he couldn't get sand. A pattern change took 25 minutes.

What is his total DOWNTIME for the day?

- a. 1 hour and 10 minutes
- b. 1 hour and 27 minutes
- c. 1 hour
- d. none of the above

2. Charles Mather worked 1 hour and 53 minutes overtime on Wednesday and 2 hours and 43 minutes overtime on Thursday.

How much is his overtime for both days?

- a. 4 hours and 36 minutes
- b. 4 hours and 15 minutes
- c. 3 hours and 67 minutes
- d. none of the above

3. Harry Brown runs the Hunter molding machine. He had to wait from 6:54 am to 8:17 for sand.

How long did he wait?

- a. 2 hours and 3 minutes
- b. 1 hour and 23 minutes
- c. 2 hours
- d. none of the above

4. Rose Ware works from 4:40 am to 1:13 pm.

How many hours a day is she at work?

- a. 9 hours and 13 minutes
- b. 7 hours and 45 minutes
- c. 8 hours and 33 minutes
- d. none of the above

5. Wayne Browning goes to work at 5:48 am and gets off at 2:10 pm. He takes 35 minutes for lunch and takes two 15 minute breaks.

How many hours a day does he actually work?

- a. 6 hours and 13 minutes
- b. 7 hours and 17 minutes
- c. 8 hours and 22 minutes
- d. none of the above

6. Tommy Green goes to work at 4:17 am and works 10 hours and 35 minutes.

What is his quitting time?

- a. 3:10 pm
- b. 2:52 pm
- c. 2:18 pm
- d. none of the above

****CHECK YOUR ANSWERS ON THE NEXT PAGE****

ANSWERS

1. The correct answer is b.
2. The correct answer is a.
3. The correct answer is b.
4. The correct answer is c.
5. The correct answer is b.
6. The correct answer is b.

If you missed many of these questions, ask your teacher to help you find the places in the lesson you need to review.

If you are ready, go to the next page and retake the quiz you took when you started this booklet.

TIME PROBLEMS-QUIZ 2

1. Jessie Tolison's shell core machine broke down for 44 minutes and was out of sand for 10 minutes. The power was off for 17 minutes. What is his total DOWN TIME for that day?
 - a. 1 hour and 5 minutes
 - b. 1 hour and 11 minutes
 - c. 75 minutes
 - d. none of the above
2. Derrick Spivey worked 2 hours and 37 minutes overtime on Monday and 1 hour 53 minutes overtime on Tuesday. How much is his OVER TIME for both days?
 - a. 4 hours and 30 minutes
 - b. 3 hours and 87 minutes
 - c. 3 hours and 60 minutes
 - d. None of the above
3. At 6:51 the Melt Deck ran out of iron. James McCoy needed to pour castings but he has to wait for iron. It's 8:10 before he got any iron. How long did he wait?
 - a. 1 hour and 45 minutes
 - b. 2 hours
 - c. 1 hour and 19 minutes
 - d. none of the above
4. Celso Cruz works from 10:35 pm to 6:15 am every day. How many hours is he at work?
 - a. 7 hours and 40 minutes
 - b. 6 hours and 35 minutes
 - c. 8 hours and 10 minutes
 - d. none of the above
5. Howard Marcantel goes to work at 4:40 am and gets off at 1:15 pm. He takes 45 minutes for lunch and takes two 10 minute GatorAde breaks. How many hours a day does he actually work?
 - a. 7 hours and 50 minutes
 - b. 8 hours
 - c. 7 hours and 30 minutes
 - d. none of the above
6. Jay Edmondson goes to work at 4:10 am and works 9 hours and 15 minutes. What is his quitting time?
 - a. 1:45 pm
 - b. 2:30 pm
 - c. 1:25 pm
 - d. none of the above

ANSWERS

1. The correct answer is b.
2. The correct answer is a.
3. The correct answer is c.
4. The correct answer is a.
5. The correct answer is c.
6. The correct answer is c.

JOBS

A PARTNERSHIP BETWEEN EDUCATION AND INDUSTRY

**CENTRAL ALABAMA COMMUNITY COLLEGE & ROBINSON FOUNDRY, INC.
1992**

LESSON 5 THE CLEANING ROOM

**ROBERT E. STONE,
PROJECT DIRECTOR
205 234 6346**

**WRITTEN BY:
BETH MAXWELL,
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205 329 8481 EXT. 81**

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CLEANING ROOM

WORD LIST:

1. Cleaning Room
2. grind
3. casting
4. core
5. sand
6. mold
7. fins
8. Green Sand
9. EPS
10. defects
11. scrap
12. safety
13. Jessie

CLEANING ROOM READING

Jessie works in the cleaning room in the foundry His job is to grind castings to finish casting for shipping. The core and sand have already been removed from mold of casting. Jessie must be very careful with fins on castings. They can easily break off. The cleaning room puts finishing touches on castings from Green Sand as well as EPS. In the cleaning room Jessie must notice castings to make sure there is no defects. Defects on castings means the castings must be considered scrap and must be remelted. safety is very important in the cleaning room. There is blowing particles from large blowers in the cleaning room. There is a great deal of noise in the cleaning room. A worker in the cleaning room must wear safety glasses, earplugs, and steel toed shoes.

Circle the words in the reading above:

1. cleaning room
2. grind
3. casting
4. core
5. sand
6. mold
7. fins
8. Green Sand
9. EPS
10. defects
11. scrap
12. safety
13. Jessie

Cleaning Room Reading

Fill in missing words:

Jessie works in the _____ room in the foundry. His job is to _____ to finish _____ for shipping. The _____ and _____ have already been removed from _____ of _____ . Jessie must be careful with _____ on _____ . They can easily break off. The _____ room puts finishing touches on _____ from _____ as well as _____ . In the _____ room Jessie must notice _____ to make sure there is no _____ on _____ means they must be considered _____ and must be remelted. _____ is very important in the _____ room. There is blowing particles from large blowers in the _____ room. There is a great deal of noise in the _____ room. A worker in the cleaning room must wear _____ glasses, earplugs, and steel toed shoes.

Fill in missing:

__ __ __ an __ __ __ r __ __ m s __ __ d

cl __ __ ni __ g __ o __ m s __ n __

c __ e __ n __ n __ ro __ __ __ __ nd

__ __ __ ani __ __ __ __ om sa __ __

__ l __ a __ i __ g __ o __ m __ an __

g __ i __ d m __ l __

__ __ i __ __ __ __ ld

__ r __ n __ do __ __

__ __ __ nd m __ __ d

gri __ __ __ ol __

__ __ __ ting __ __ n

c __ __ t __ __ g f __ n

c __ s __ i __ g f __ __

__ __ __ t __ __ g __ in

cas __ __ __ __ i __

c __ r __ Gr __ __ n S __ n __

__ __ re G __ __ __ n S __ __ d

co __ __ G __ e __ n S __ n __

c __ __ e __ __ __ en Sa __ __

__ o __ e Gre __ __ __ __ __ d

__ or __

PREACTIVITY FOR A to Z

1. _____ st
2. b _____ d
3. j k _____
4. x _____ z
5. m n _____
6. _____ f g
7. o p _____
8. h _____ j
9. p _____ r
10. _____ v w
11. a b _____
12. _____ j k
13. d _____ f
14. _____ x y
15. g h _____
16. s _____ u
17. n _____ p
18. e f _____
19. h i _____
20. t u _____

fn: Beth\alpha

PREACTIVITY FOR ALPHABETICAL ORDER

- 1. FLASK 1. _____
- 2. ACCIDENT 2. _____
- 3. CORE 3. _____
- 4. SAND 4. _____
- 5. PATTERN 5. _____

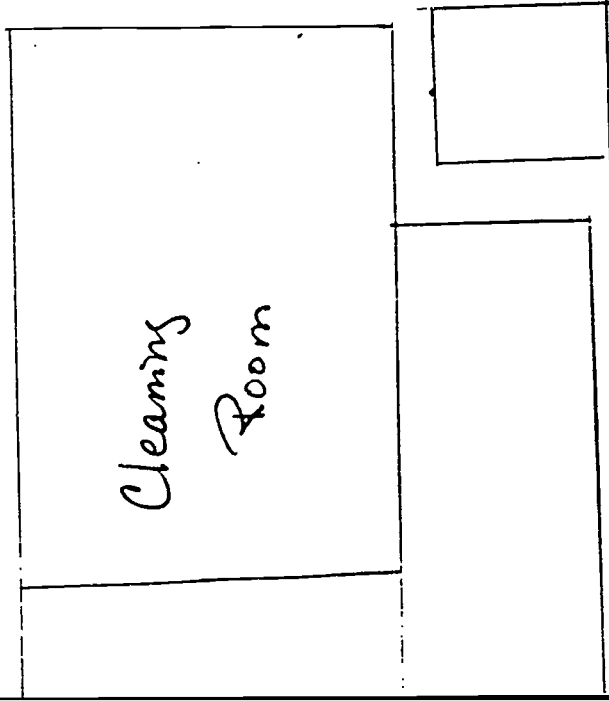
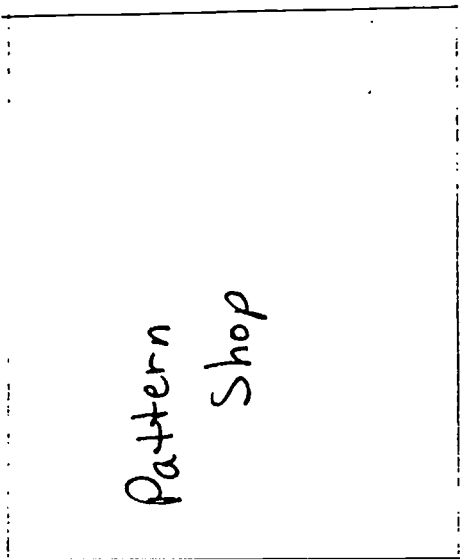
- 1. MOLD 1. _____
- 2. SLAG 2. _____
- 3. FIN 3. _____
- 4. EPS 4. _____
- 5. CASTING 5. _____

- 1. DEFECT 1. _____
- 2. SCRAP 2. _____
- 3. BP 3. _____
- 4. SAFETY 4. _____
- 5. HAMMER 5. _____

FN: BETH\ALPHA2

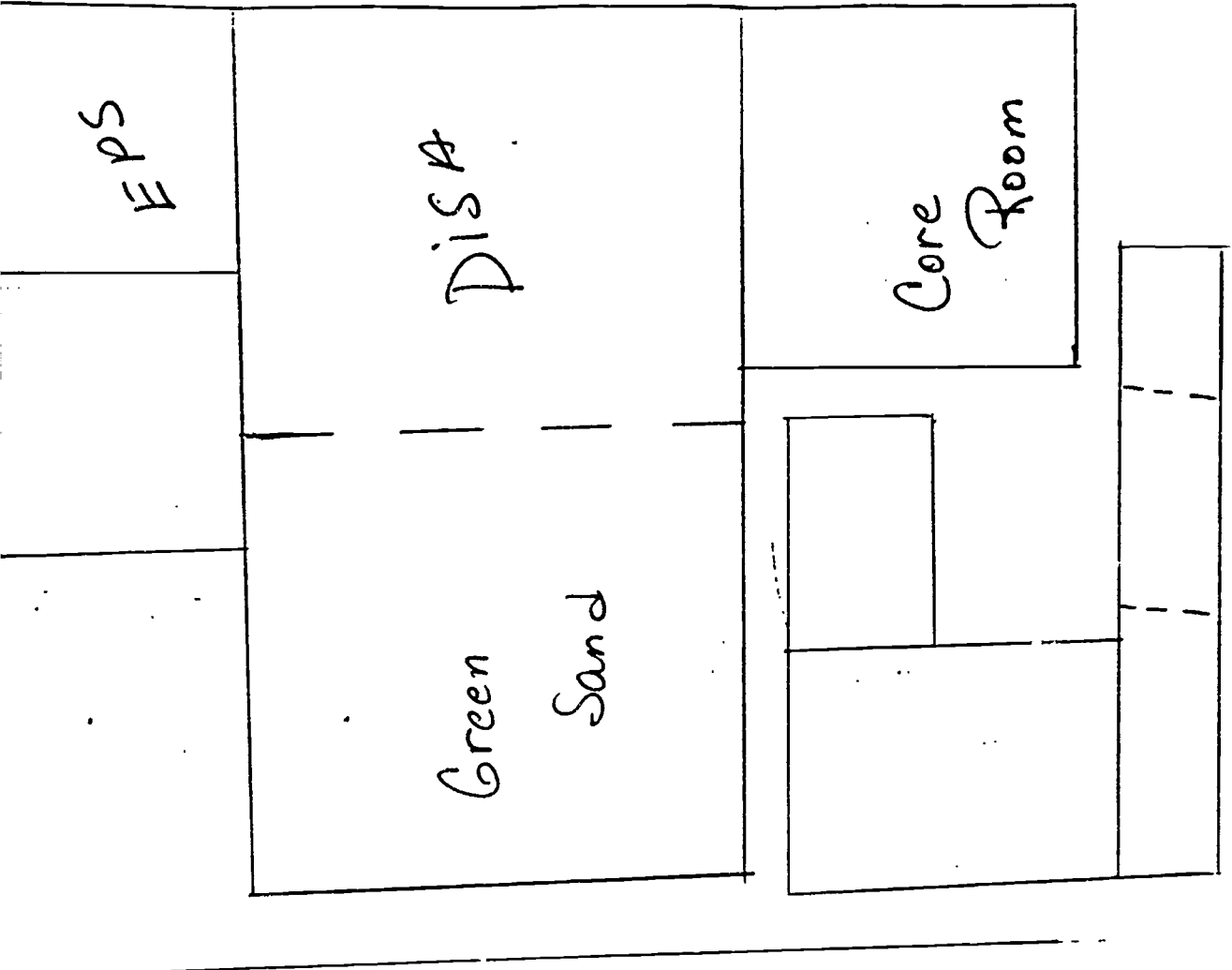
FIND THE DEPARTMENTS ON THE MAP

1. Personnel and Lab
2. Supply
3. Cleaning Room
4. Shipping
5. Pattern Shop
6. Iron Melting
7. EPS
8. Green Sand
9. Disa
10. Core Room
11. Storage
12. Storage
13. Maintenance
14. Security



Shack

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Robinson Foundry

JOB

A PARTNERSHIP BETWEEN EDUCATION AND INDUSTRY

**CENTRAL ALABAMA COMMUNITY COLLEGE & ROBINSON FOUNDRY, INC.
1992**

LESSON 6 THE EPS PROCESS

**ROBERT E. STONE
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205 234 6346**

**WRITTEN BY:
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In the following lesson on **The EPS Process** you will learn how EPS castings are made.

First, take the quiz on the next 2 pages to see what you already know.

EPS--Quiz 1

DIRECTIONS

Circle the answer you think is correct. The first one is done for you.

1. What does EPS mean?
 - a. Exothermic Polystyrene Styrofoam
 - b. Expandable Process Styrofoam
 - {c.} Evaporated Polystyrene System

2. How old is the "lost foam" process?
 - a. over 3000 years old
 - b. over 300 years old
 - c. over 30 years old

3. What are EPS patterns made of?
 - a. excess styrofoam
 - b. expandable polystyrene beads
 - c. iron, aluminum, plastic, or wood.

4. Which of the following is an important part of the foam assembler's job?
 - a. Making a strong glue seam between the pattern and the gating.
 - b. Making sure the pattern is completely covered by the coating.
 - c. Setting the sprue correctly.

5. Why are EPS patterns dipped in a coating?
 - a. To keep the styrofoam from melting.
 - b. To eliminate mold wall movement.
 - c. To keep the iron from touching the sand when the iron is poured.

6. Why is EPS called "Lost Foam"?

- a. Because EPS castings have fewer defects and have "lost" the need for grinding.
- b. Because the pattern evaporates when the molten iron hits it.
- c. Because EPS castings have "lost" the extra metal such as the parting line.

7. Why are EPS castings better than Green Sand castings?

- a. Tolerance bands are higher.
- b. Better dimensional accuracy
- c. Sand binders eliminate gas defects.

Most trainees do not know all the answers to the quiz you've just taken, but after you read the passage and answer the questions on the following pages, you'll know a lot more about the EPS process.

At the end of the lesson you'll take a quiz and see your scores for both times.

EPS...The "Lost Foam" Process

EPS stands for Evaporated Polystern System. This new way of making castings was invented by H. F. Shroyer in 1958. Castings are made by pouring molten metal into styrofoam patterns.

This is a new way of making castings. The Green Sand way of making castings is thousands of years old.

Robinson began making EPS castings in 1984. The process is still new, and Robinson is still making improvements,

ANSWER THESE QUESTIONS

DIRECTIONS

Circle the letter of your answer choice.

1. What is the passage mainly about?
 - a. EPS is a new way of making castings.
 - b. H.F. Shroyer invented EPS in 1958
 - c. EPS castings are made out of styrofoam.

2. When did Robinson start making EPS Castings?
 - a. 1958
 - b. 1984
 - c. 1989

CHECK YOUR ANSWERS ON THE NEXT PAGE

ANSWERS

1.
 - a. This is the correct answer.
 - b. While this is true, other information is discussed in the passage.
 - c. While this is true, other information is discussed in the passage.

2.
 - b. This is the correct answer.
 - a. G.F. Shroyer invented EPS in 1958. Robinson did not begin making EPS castings until 1984.
 - c. This is an incorrect date.

OUTLINE OF THE EPS PROCESS

EPS patterns are made from expandable polystyrene beads. The beads are heated and injected into a mold. The heat makes the beads puff up and stick together. This process makes foam pattern pieces in the shape of castings.

Robinson does not make EPS patterns. They buy them from different companies. When the pieces come to EPS Receiving and Inspection, the Robinson worker weighs them. The patterns are sent to Foam Assembly.

The workers in Foam Assembly must first check the pattern pieces for defects. Next, the workers must glue together pattern pieces and attach the gating. The glue is a 'hot melt adhesive'. The glue seam between the pattern piece and the gating must be very strong. To make a good seam, the glue must be between 260-290 degrees in temperature.

Next the patterns go to the Dipping Area. The patterns are dipped in a refractory coating. The coating will keep the iron from touching the sand when the casting is poured. The coated patterns are put in a dryer. Each piece is weighed after dipping and after drying.

The patterns go to the Cluster Table. The patterns are glued together into groups called clusters.

The patterns clusters are moved to Molding. The clusters are put into a special flask and covered with unbonded sand.

Next, the flasks move around to the Pouring Station. Molten iron is poured into the flasks. The hot iron hits the foam pattern and evaporates, or melts, it. This is why the EPS process is called "lost foam. The foam is "lost" when the iron hits it. The metal then fills the hole left by the pattern.

After pouring, the flasks move to Shakeout. The castings are removed from the sand and sent to the Cleaning Room. The sand is cooled for reuse in the process.

ANSWER THE QUESTIONS ON THE FOLLOWING PAGE

DIRECTIONS

Circle the answer you think is correct. The first one is done for you.

1. How are EPS patterns made?
 - {a} Expandable polystyrene beads are heated and injected into a mold.
 - b. Wood masters are cut on the lathe in the pattern shop.
 - c. The bead collapse is filled into the mold.
2. According to the passage, if you worked in Receiving, what would be your job responsibility?
 - a. gluing the gating
 - b. assembling the patterns
 - c. weighing the patterns
3. After reading this passage, you should know that an important part of an Assembler's job is to
 - a. weigh the pattern pieces
 - b. keep the glue temperature within specification
 - c. sand the gating edges
4. According to the passage, why is the coating important?
 - a. It keeps the gating from melting.
 - b. It keeps the iron from touching the sand.
 - c. It keeps the glue seam from melting.
5. According to the passage, if you worked in Dipping, which of the following skills would you need?
 - a. To be able to fill out a time sheet.
 - b. To be able to read a weighing scale.
 - c. To be able to read a Zahn scale.
6. After reading the passage, you should know that a cluster is the
 - a. gating glued on correctly
 - b. patterns glued together
 - c. refractory coating

7. Which sand is used in EPS flasks?
- a. bonded
 - b. unbonded
8. Why is EPS called "Lost Foam"?
- a. The hot iron evaporates, or melts, the foam.
 - b. The castings have "lost" the extra metal such as the parting line.
 - c. The castings have "lost" the need for grinding.
9. According to the passage, which of the following tells how iron makes an EPS casting?
- a. It melts the refractory coating.
 - b. It fills the hole left by the evaporated pattern.
 - c. It moves thru the gating and then through the sprue.

CHECK YOUR ANSWERS ON THE NEXT PAGE

ANSWERS

1. a. This answer is correct.
 - b. This is the way Green Sand patterns are made. This is not mentioned in the passage.
 - c. This is false information.
2. c. This answer is correct.
 - a. This is the job of the Assembly Room.
 - b. This is the job of the Assembly Room.
3. b. This answer is correct. The assembler must make a good glue seam. A good glue seam requires glue that is kept within the temperature specifications.
 - a. Workers in Receiving do this job.
 - b. This was not mentioned in the passage.
4. b. This answer is correct.
 - a. This was not mentioned in the passage.
 - b. This was not mentioned in the passage.
5. b. This answer is correct. The worker must weigh the patterns after dipping and after drying; therefore, the worker must be able to read weighing scales.
 - a. This was not mentioned.
 - b. The Zahn cup measures paint thickness. It was not mentioned in class.
6. b. This answer is correct.
 - a. This is incorrect.
 - b. This is incorrect.
7. b. This answer is correct.
 - a. Green Sand molds use bonded sand.
8. a. This answer is correct.
 - b. Even though the EPS castings have lost extra metal, this is not why they are called "lost foam".
 - c. Some EPS castings have to be ground; therefore, this answer is incorrect.
9. b. This answer is correct.
 - a. This is false information.
 - c. This is not mentioned in the passage.

WHY EPS CASTINGS ARE BETTER

EPS castings have a very good surface finish. EPS castings have cleaner surfaces and cleaner inside spaces.

EPS casting have better detail and dimensional accuracy. Dimensions are the measurements of length, width, and thickness of a casting. EPS casting dimensions are easier to control than Green Sand.

EPS castings have fewer defects than Green Sand. Because EPS sand does not have binders and the patterns do not have cores, EPS castings do not have gas porosity defects. The unbonded sand keeps the EPS casting from having shrinkage defects.

EPS casting have a lower finishing cost. The castings do not have extra metal on them that has to be ground off. The castings do not require as much machining as Green Sand castings.

THE FUTURE OF EPS

Today Robinson is a leader in the EPS process. They make more grey iron castings by lost foam than any other independent foundry in the world. Foundry owners from 22 different countries have come to Alex. City to see the EPS process. The future looks bright.

ANSWER THESE QUESTIONS

DIRECTIONS

Fill in the blanks with words from the passage.

The first one is done for you.

1. EPS castings generally have better surface finish and have cleaner _____ spaces.
2. Castings measurements of length, width, and thickness are called _____.
3. Cleaning room cost are _____ with EPS because extra _____ doesn't have to be ground off.
4. EPS castings don't have _____ defects because the sand doesn't have binders.

5. Because EPS castings don't have cores, the castings do not have gas porosity _____.
6. Because EPS sand is _____, EPS castings do not have shrinkage defects.
7. EPS casting _____ are easier to control than Green Sand.
8. Robinson makes more "lost foam" castings than any other independent foundry in the _____.

MATCH THE WORDS TO THEIR MEANING

DIRECTIONS

Put the number of the word in front of the correct meaning.

1. glue ___ Holds the cluster for the iron pouring
2. dimension ___ Keeps iron from touching the sand
3. Receiving ___ another name for EPS
4. Lost Foam ___ groups of EPS patterns glued together
5. coating ___ Evaporated Polystyrene System
6. EPS ___ hot melt adhesive
7. EPS pattern ___ length, width, thickness of a casting
8. Robinson ___ They weigh EPS patterns
9. flask ___ Makes more EPS castings than anyone else
10. cluster ___ Made out of Expandable Polystyrene Beads

CHECK YOUR ANSWER ON THE NEXT PAGE

ANSWERS

FILL IN THE BLANKS

1. surface, inside
2. dimensions
3. lower, metal
4. gas porosity
5. defects
6. unbonded
7. dimensions
8. world

MATCHING

- 9
- 5
- 4
- 10
- 6
- 1
- 2
- 3
- 8
- 7

You have completed the lesson.

Go on to the next page to retake the quiz you started this booklet, or go back and review the lesson before taking the quiz.

EPS--Quiz 2

DIRECTIONS

Circle the answer you think is correct.

1. What does EPS mean?
 - a. Exothermic Polystyrene Styrofoam
 - b. Expandable Process Styrofoam
 - c. Evaporated Polystyrene System

2. How old is the "lost foam" process?
 - a. over 3000 years old
 - b. over 300 years old
 - c. over 30 years old

3. What are EPS patterns made of?
 - a. excess styrofoam
 - b. expandable polystyrene beads
 - c. iron, aluminum, plastic, or wood.

4. Which of the following is an important part of the foam assembler's job?
 - a. Making a strong glue seam between the pattern and the gating.
 - b. Making sure the pattern is completely covered by the coating.
 - c. Setting the sprue correctly.

5. Why are EPS patterns dipped in a coating?
 - a. To keep the styrofoam from melting.
 - b. To eliminate mold wall movement.
 - c. To keep the iron from touching the sand when the iron is poured.

6. Why is EPS called "Lost Foam"?
- a. Because EPS castings have fewer defects and have "lost" the need for grinding.
 - b. Because the pattern evaporates when the molten iron hits it.
 - c. Because EPS castings have "lost" the extra metal such as the parting line.
7. Why are EPS castings better than Green Sand?
- a. Tolerance bands are higher.
 - b. Better dimensional accuracy
 - c. Sand binders eliminate gas defects.

CHECK THE NEXT PAGE FOR THE CORRECT ANSWER TO THE QUIZ

ANSWERS

1. c
2. c
3. b
4. a
5. c
6. b
7. b

8

JOB
A PARTNERSHIP BETWEEN EDUCATION AND INDUSTRY

CENTRAL ALABAMA COMMUNITY COLLEGE & ROBINSON FOUNDRY, INC.
1992

LESSON 7
GREEN SAND

ROBERT E. STONE
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205 234 6346 EXT.6217

WRITTEN BY:
BETH MAXWELL,
INSTRUCTOR
205 329 8481 EXT.81

208

PALLET LINE

WORD LIST

1. Pallet line
2. Shake-out
3. Castings
4. Sand
5. Core
6. Mold
7. Green Sand
8. EPS
9. Fins
10. Product

PALLET LINE READING

Frank works in the Pallet Line or green sand process. He works on shake-out line. All the castings come out of shake-out machine for Frank to remove excess sand. The core of castings also comes out of the machine. The sand holds together to form mold of casting. The green sand process is done through pallet line. The process uses sand other than foam like in EPS. Fins must be added to castings for finished product. The product must be done completely to be taken by the customer.

Circle the following words in the reading:

1. Pallet line
2. shake-out
3. castings
4. sand
5. core
6. mold
7. Green Sand
8. EPS
9. fins
10. product

Fill in missing words:

Frank works in the _____ . He works on _____ . All the _____ come out of _____ machine for Frank to remove excess _____. The _____ of _____ also comes out of machine. The _____ holds together to form _____ of _____. The _____ process is done through _____. The process uses _____ other than foam as in _____. _____ must be checked on _____. The _____ must be done completely to be taken by the customer.

p__l__t__i__e
pall__ __ __ __e
p__l__e__l__ __ __
pal__ __ __ l__ __ __
__ __ __let __ __ne
pall__t__l__ne

sh__k__-__u__
s__a__e__-__ut
sha__ __-__ __t
sh__ __e__-__ut
sha__ __-ou__

__ __ __ting
c__ __t__ __g
c__s__i__ __g
__ __ __ting
cas__ __ __ __

s__ __d
s__n__
__ __nd
sa__ __
SAN__

c__r__
__ __re
co__ __
c__ __e
__o__e
__or__

m__l__
__ __ld
mo__ __
m__ __d
__ol__

E__ __
E__S
__ __S
__P__
__PS

__ __N
F__N
F__ __
__I__
__IN

PREACTIVITY FOR A to Z

1. _____st
2. b_____d
3. j k _____
4. x_____z
5. m n _____
6. _____f g
7. o p _____
8. h _____j
9. p _____r
10. _____v w
11. a b _____
12. _____j k
13. d _____f
14. _____x y
15. g h _____
16. s _____u
17. n _____p
18. e f _____
19. h i _____
20. t u _____

fn:Beth\alpha

PREACTIVITY FOR ALPHABETICAL ORDER

- | | |
|-------------|----------|
| 1. FLASK | 1. _____ |
| 2. ACCIDENT | 2. _____ |
| 3. CORE | 3. _____ |
| 4. SAND | 4. _____ |
| 5. PATTERN | 5. _____ |

- | | |
|------------|----------|
| 1. MOLD | 1. _____ |
| 2. SLAG | 2. _____ |
| 3. FIN | 3. _____ |
| 4. EPS | 4. _____ |
| 5. CASTING | 5. _____ |

- | | |
|-----------|----------|
| 1. DEFECT | 1. _____ |
| 2. SCRAP | 2. _____ |
| 3. BP | 3. _____ |
| 4. SAFETY | 4. _____ |
| 5. HAMMER | 5. _____ |

FN: BETH\ALPHA2

FIND THE DEPARTMENTS ON THE MAP

1. Personnel and Lab
2. Supply
3. Cleaning Room
4. Shipping
5. Pattern Shop
6. Iron Melting
7. EPS
8. Green Sand
9. Disa
10. Core Room
11. Storage
12. Storage
13. Maintenance
14. Security

Color green.

Pattern Shop

Cleaning Room

Shack

246

IRON

EPS

Green

Sand

Disa.

Core

Room

247

Robinson Foundry

JOBS
A PARTNERSHIP BETWEEN EDUCATION AND INDUSTRY

CENTRAL ALABAMA COMMUNITY COLLEGE & ROBINSON FOUNDRY, INC.
1992

LESSON 8
EPS-1

ROBERT E. STONE,
PROJECT DIRECTOR
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WRITTEN BY:
BETH MAXWELL,
INSTRUCTOR
205 329 8481 EXT 81

243

EPS WORD LIST

1. EPS
2. PROCESS
3. FOUNDRY
4. CASTING
5. FOAM
6. POURED
7. SAND
8. FLASK
9. IRON
10. DUMP

EPS READING

Quinton works in EPS at Robinson Foundry. EPS is the process in the Foundry that uses styrofoam to make castings. The foam is placed inside the flask. The sand is poured over the foam from an automatic sand dump. After the dump packs the sand, then the iron is poured through a sprue into the foam. The foam evaporates when iron is poured into the flask.

Circle these words in the reading:

1. EPS
2. process
3. Foundry
4. casting
5. foam
6. poured
7. sand
8. flask
9. iron
10. Quinton
11. dump

EPS READING

_____ works in _____. _____ is the
_____ in the _____ that uses styrofoam
to make _____. The _____ is placed
inside the _____. The _____ is _____
over the _____ from an automatic _____ dump. After
the _____ packs the _____ then the _____ is
_____ through a sprue into the _____. The
frame exaporates when the _____ is _____
into the _____.

Fill in the following words:

1. EPS
2. process
3. Foundry
4. casting
5. foam
6. poured
7. sand
8. flask
9. iron
10. Quinton
11. dump

EPS

Fill in the missing letters:

__ P __

__ P S

__ __ S

E __ __

__ __ __

F __ u __ d __ y

F __ __ __ d __ __

__ o __ n __ r __

__ __ __ n d __ __

__ __ __ __ d __ __

f __ a __

f __ __ m

__ __ a __

__ o __ m

__ __ a __

p __ o __ e __ s

p __ __ c __ __ s

__ r __ c __ s __

__ __ __ c __ __ __

p __ __ __ __ __ s

c __ s t __ n __

c __ __ t __ __ g

__ __ s __ i __ __

__ a __ t __ n __

c a __ __ __ __ g

__ o __ r __ d

__ __ __ r __ __

p __ __ __ __ d

p __ u __ e __

p __ __ r __ __

f __ a __ __

f l __ __ k

__ l __ s __

__ __ a __ k

__ __ __ s __

__ r __ n

__ __ o __

i __ o __

i __ __ __

__ r __ __



PREACTIVITY FOR A to Z

1. _____st
2. b_____d
3. j k _____
4. x_____z
5. m n _____
6. _____f g
7. o p _____
8. h _____ j
9. p _____r
10. _____v w
11. a b _____
12. _____j k
13. d _____ f
14. _____x y
15. g h _____
16. s _____ u
17. n _____ p
18. e f _____
19. h i _____
20. t u _____

PREACTIVITY FOR ALPHABETICAL ORDER

1. FLASK 1. _____

2. ACCIDENT 2. _____

3. CORE 3. _____

4. SAND 4. _____

5. PATTERN 5. _____

1. MOLD 1. _____

2. SLAG 2. _____

3. FIN 3. _____

4. EPS 4. _____

5. CASTING 5. _____

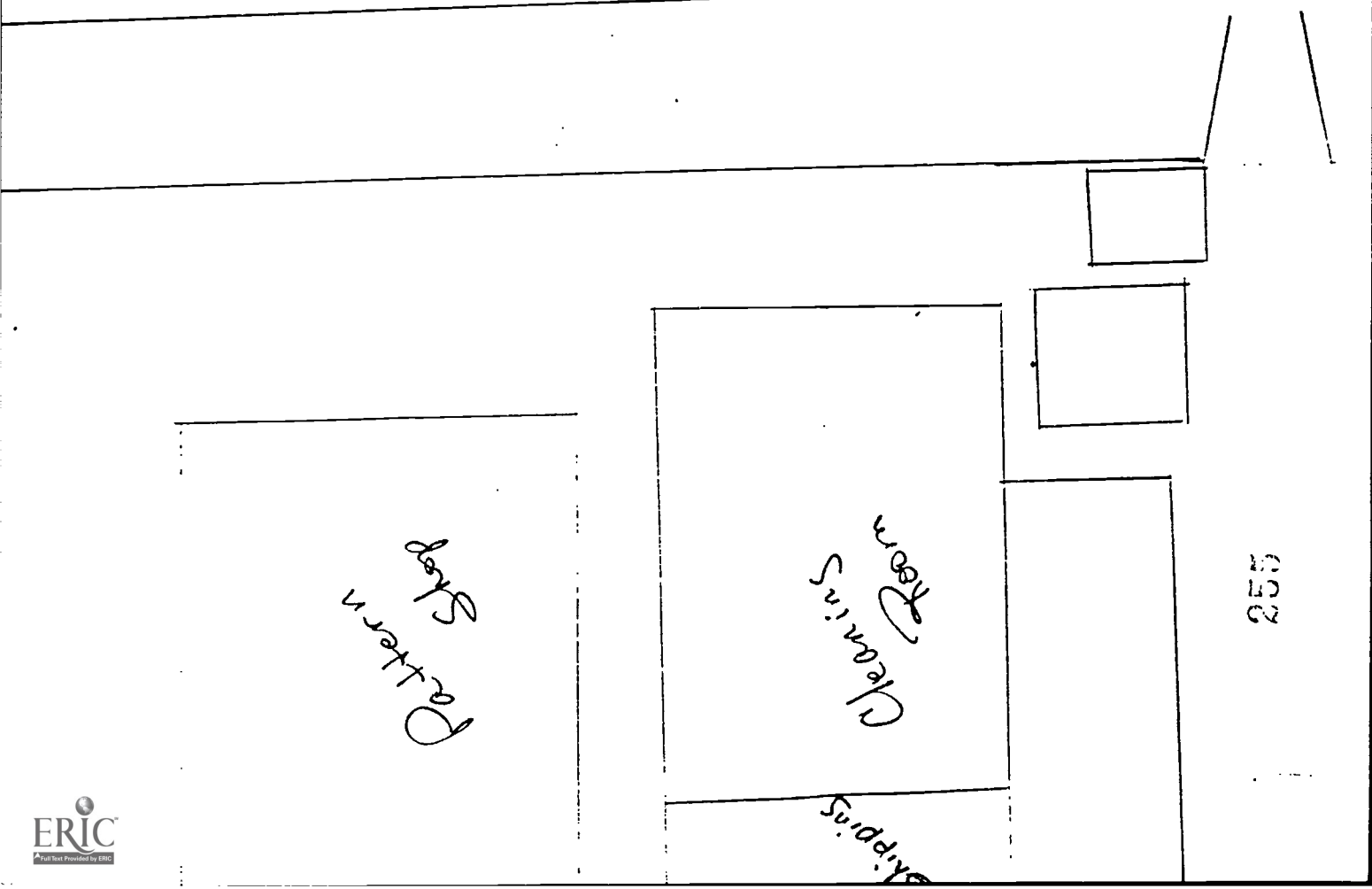
1. DEFECT 1. _____

2. SCRAP 2. _____

3. BP 3. _____

4. SAFETY 4. _____

5. HAMMER 5. _____

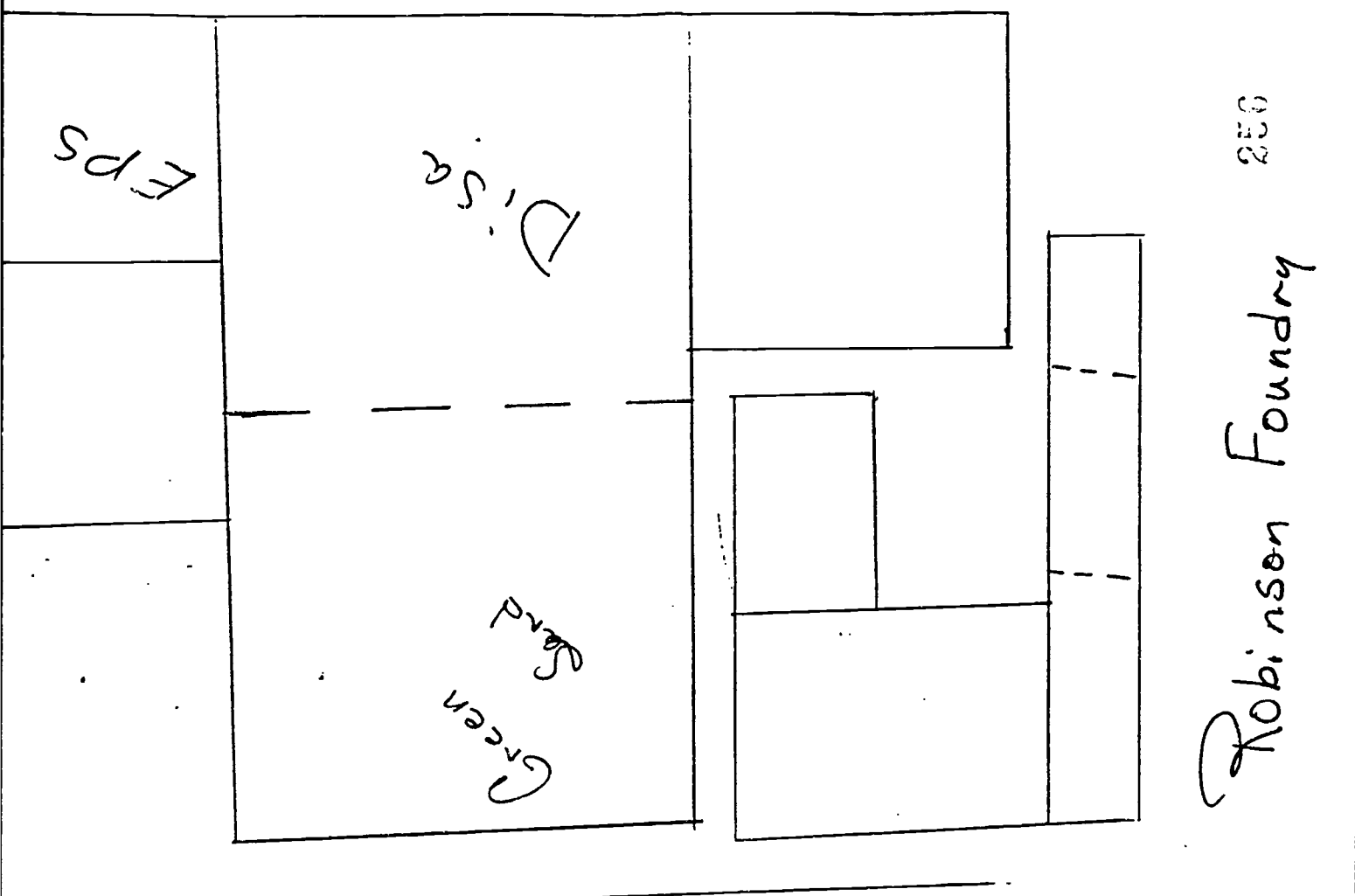


Pattern Shop

Clearing Room

Shipping

255



Green Sand

Disa

FPS

Robinson Foundry

250

JOBS
A PARTNERSHIP BETWEEN EDUCATION AND INDUSTRY

CENTRAL ALABAMA COMMUNITY COLLEGE & ROBINSON FOUNDRY, INC.
1992

LESSON 9
EPS-2

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205 234 6346 EXT 6217

WRITTEN BY:
BETH MAXWELL,
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205 329 8481 EXT 81

257

EPS READING-2 WORD LIST

1. EPS
2. foam
3. department
4. pattern
5. sprue
6. sand
7. iron
8. cluster
9. flask
10. assembly

EPS READING-2

In EPS the styrofoam patterns are ordered from other companies. The patterns are delivered to assembly at Robinson Foundry. In assembly the pieces are glued together and then sent up to EPS department. In the department the foam is dipped in a mixture to keep the sand and foam separate. Then the foam is put in a cluster to place in the flask. A cone shaped foam piece called a sprue is glued to the cluster. The sprue is attached to the cluster before sand is dumped in the flask. After the sand is packed, then the iron is poured into the sprue and runs into the foam. The foam evaporates as soon as the hot iron hits it. The casting is formed by the pattern made in the sand.

Circle the following words in reading:

1. EPS
2. foam
3. department
4. pattern
5. sprue
6. sand
7. iron
8. cluster
9. flask
10. assembly

EPS READING-2

In _____ the styrofoam _____ are ordered from other companies. The _____ are delivered to _____ at Robinson Foundry. In _____ the pieces are glued together and then sent up to _____. In the _____ the _____ is dipped in a mixture to keep the _____ and _____ separate. Then the _____ is put in a _____ to place in the _____. A cone shaped _____ piece called a _____ is glued to the _____. The _____ is attached to the _____ before _____ is dumped in the _____. After the _____ is packed then the _____ is poured into the _____ and runs into the _____. The _____ evaporates as soon as the hot _____ hits it. The casting is formed by the _____ made in the _____.

EPS-2

Fill in the missing letters:

E _ _

_ P _

_ _ _

E P _

_ _ S

_ o _ m

f o _ _

_ _ a m

f _ a _

f _ _ m

_ e _ a _ t _ e _ t

d _ p _ r _ m _ n _

d _ _ a _ _ n _ _ t

_ _ _ a _ _ _ e _ _

_ _ p _ _ t _ _ n t

_ _ _ t _ _ n

_ _ t _ _ r n

p _ t _ e _ n

p _ _ t _ _ _

_ _ t t _ _ n

s _ r _ e

s _ _ u _

_ _ r _ _

_ p _ u _

_ _ _ u _

s _ n _

_ a _ d

_ _ n d

s a _ _

s _ _ d

a _ _ e m _ _ _

a s _ e _ b _ y

_ _ _ e _ _ l _

a _ s _ m _ l _

_ s _ e _ b _ y

c l _ _ t _ _

_ _ u _ t _ _

_ l _ s _ e _

c _ u _ t _ r

_ _ _ _ t _ _

PREACTIVITY FOR A to Z

1. _____st
2. b_____d
3. j k _____
4. x_____z
5. m n _____
6. _____f g
7. o p _____
8. h _____j
9. p _____r
10. _____v w
11. a b _____
12. _____j k
13. d _____f
14. _____x y
15. g h _____
16. s _____u
17. n _____p
18. e f _____
19. h i _____
20. t u _____

PREACTIVITY FOR ALPHABETICAL ORDER

- | | |
|-------------|----------|
| 1. FLASK | 1. _____ |
| 2. ACCIDENT | 2. _____ |
| 3. CORE | 3. _____ |
| 4. SAND | 4. _____ |
| 5. PATTERN | 5. _____ |

- | | |
|------------|----------|
| 1. MOLD | 1. _____ |
| 2. SLAG | 2. _____ |
| 3. FIN | 3. _____ |
| 4. EPS | 4. _____ |
| 5. CASTING | 5. _____ |

- | | |
|-----------|----------|
| 1. DEFECT | 1. _____ |
| 2. SCRAP | 2. _____ |
| 3. BP | 3. _____ |
| 4. SAFETY | 4. _____ |
| 5. HAMMER | 5. _____ |

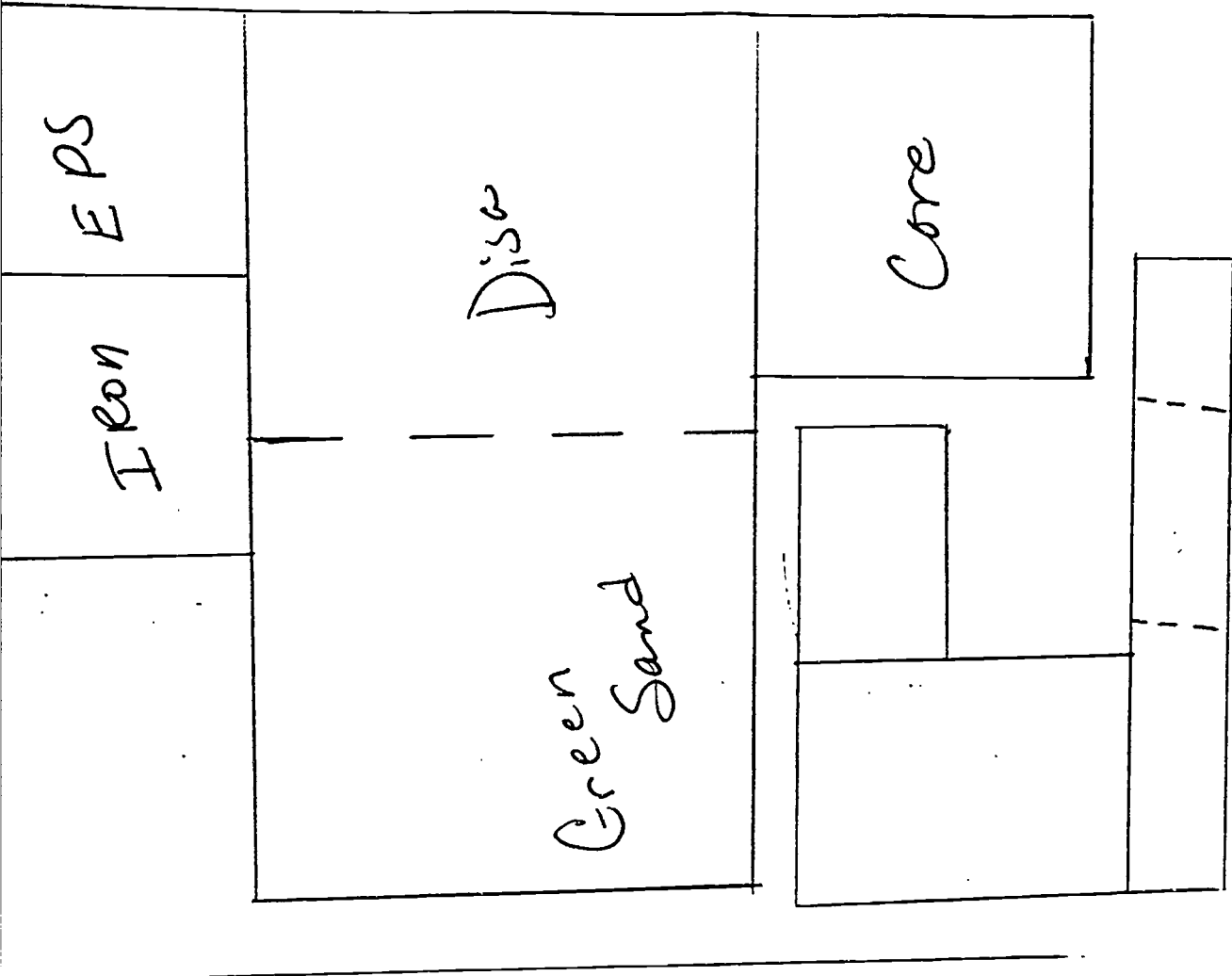
Pattern Shop

Cleaning Room

Shipping

204

Robinson Foundry 205



JOB
A PARTNERSHIP BETWEEN EDUCATION AND INDUSTRY

CENTRAL ALABAMA COMMUNITY COLLEGE & ROBINSON FOUNDRY, INC.
1992

LESSON 10
GRINDING PRODUCTION SHEET

ROBERT E. STONE,
PROJECT DIRECTOR
205 234 6346 EXT 6217

WRITTEN BY:
SANDRA MANN,
INSTRUCTOR/COUNSELOR
205 329 8481 EXT 81

The GRINDING PRODUCTION SHEET is used in the Cleaning Room.

Grinders fill out this form to report the number of castings they have cleaned. The completed forms go to the office where the information is put into the computer.

Read the following pages to learn how to read and fill out a GRINDING PRODUCTION SHEET.

Ask your teacher for a blank GRINDING PRODUCTION SHEET to use while learning about this form. Answer any questions on your paper.

DO NOT WRITE IN THIS BOOKLET

The orange lines tell information about the employee doing the work.

It is very important for the employee to write his or her full name so the office can put the information in the computer.

GRINDING PRODUCTION

DATE: _____ SHIFT: _____ WORK CENTER: _____

GRINDER(S): _____

CASTING NUMBER	PRODUCTION		TIME START	TIME STOP
	TOT. GROUND	TOT. SCRAP		

PM4/PROD0009/061191



The GRINDING PRODUCTION SHEET is different from other productions sheets. It has only column headings. There are no row headings down the side.

Look at the column heading in pink. When a pallet full of castings is placed in front of a grinding station, the worker writes the casting number here.

GRINDING PRODUCTION

DATE: _____ SHIFT: _____ WORK CENTER: _____

GRINDER(S): _____

CASTING NUMBER	PRODUCTION		TIME START	TIME STOP
	TOT. GROUND	TOT. SCRAP		



Look at TOT. GROUND in blue. TOT. stands for total. This column shows how many good castings on each pallet are cleaned, ground, and sent to the Finishing Department.

Look at TOT. SCRAP in green. TOT. stands for total. This column shows how many defects were found and set aside for Quality Control to inspect.

GRINDING PRODUCTION

DATE: _____ SHIFT: _____ WORK CENTER: _____

GRINDER(S): _____

CASTING NUMBER	PRODUCTION		TIME START	TIME STOP
	TOT. GROUND	TOT. SCRAP		



The last two columns show how long it took the worker to grind each pallet of castings.

Look at TIME START in yellow. The worker writes the time he begins work on the pallet.

Look at TIME STOP in pink. The worker writes the time he finishes the pallet.

GRINDING PRODUCTION

DATE: _____ SHIFT: _____ WORK CENTER: _____
GRINDER(S): _____

CASTING NUMBER	PRODUCTION		TIME START	TIME STOP
	TOT. GROUND	TOT. SCRAP		

Do the exercises on the following pages
to see how much you have learned about
the GRINDING PRODUCTION SHEET.

GRINDING PRODUCTION SHEET

DIRECTIONS: Answer the following questions about the **GRINDING PRODUCTION SHEET** on the next page. Write your answers on your paper.

1. How many pallets did the worker complete for this day?
2. Which pallet had less than 5 castings ground?
3. Which pallet had the most scrap?
4. Which pallet had the least scrap?
5. Which pallet took the most time to grind?
6. Which pallet took the least time to grind?

CHECK YOUR ANSWERS ON THE NEXT PAGE.

GRINDING PRODUCTION

DATE: 1-20-92 SHIFT: 1 WORK CENTER: _____
 GRINDER(S): Dexter Russell

CASTING NUMBER	PRODUCTION		TIME START	TIME STOP
	TOT. GROUND	TOT. SCRAP		
346038	15	3	6:10	7:48
121-0028	22	4	8:10	9:52
32007-10-10	5	0	10:05	11:47
436038	2	1	12:10	12:28
09193-10-0	6	2	1:10	1:58



ANSWERS

1. 5 pallets
2. 32007-10-10
3. 121-0028
4. 32007-10-10
5. 09193-10-0
6. 436038

GRINDING PRODUCTION EXERCISE

DIRECTIONS: Fill out a GRINDING PRODUCTION SHEET for the following work.

The TOT SCRAP is not shown. You figure this by subtracting the number ground from the number on the pallet.

1. Beginning at 6:00, you work on 346038. You have 18 castings on your pallet. You grind 15 castings and finish at 6:48.
2. At 6:50, you work on 905866. You have 3 on your pallet. You get 3 ground by 7:14.
3. You begin work on 905978 at 7:30. You have 4 castings on your pallet. You get 4 done by 7:54.
4. Work on 095F1201 begins at 8:00. There are 13 castings on your pallet. 11 castings are ground. The castings are finished at 8:54.
5. At 9:10, you begin work on 122 castings of SD-6065. You grind 110 and finish at 10:00.
6. At 11:00, you begin on 121-0028. There are 31 castings on the pallet. You grind 22 castings and you finish the pallet at 12:42.
7. You begin work on 09234-10-0 at 12:45. There are 69 castings on your pallet. You grind 65 castings. This takes you until 2:03, the end of your shift.

DID YOU REMEMBER TO SUBTRACT TO FIND THE SCRAP TOTALS?

CHECK YOUR ANSWERS ON THE NEXT PAGE

Answer Key

GRINDING PRODUCTION

DATE: _____ SHIFT: _____ WORK CENTER: _____
GRINDER(S): _____

CASTING NUMBER	PRODUCTION		TIME START	TIME STOP
	TOT. GROUND	TOT. SCRAP		
3460 38	15	3	6:00	6:48
905866	3	0	6:50	7:14
905978	4	0	7:30	7:54
095F 1201	11	2	8:00	8:54
5D-6065	110	12	9:10	10:10
121-0028	22	9	11:00	12:42
09234-10-0	65	4	12:45	2:03

CONGRATULATIONS!

You have learned how to read and fill out a **GRINDING PRODUCTION SHEET.**

If you have any questions, ask your teacher for help.

JOB
A PARTNERSHIP BETWEEN EDUCATION AND INDUSTRY

CENTRAL ALABAMA COMMUNITY COLLEGE & ROBINSON FOUNDRY, INC.
1992

LESSON 11
BUILDING AND GROUNDS

ROBERT E. STONE,
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WRITTEN BY:
BETH MAXWELL,
INSTRUCTOR
205 329 8481 EXT 81

BUILDING AND GROUNDS WORD LIST

1. Building
2. Grounds
3. Foundry
4. Trash
5. Cleans
6. Safety
7. Departments
8. Pallet Line
9. Core
10. EPS
11. Cleaning
12. Materials

BUILDING AND GROUNDS-READING

Robert works on Building and Grounds at Robinson Foundry. He emptys trash and cleans departments. He must be careful and watch safety signs. He must do many tasks. He reports to his supervisor, Sam Huntley, who gives him orders for the day. He works in all departments, Pallet Line, Melt Deck, Core Room, Cleaning Room and EPS. He sometimes must go to special places in the Foundry to clean or put materials away.

Circle these words in the reading:

1. Building
2. Grounds
3. Foundry
4. trash
5. cleans
6. safety
7. departments
8. Pallet Line
9. Core
10. EPS
11. Cleaning
12. materials

BUILDING AND GROUNDS-READING

Fill in the missing letters:

Robert works on B _ _ _ _ i _ _ _ _ and _ _ _ _ _nds
at Robinson F _ _ _ _ d _ _ _ . He emptys _ _ _ _ _ and
_ _ _ _ _ departments. He must be careful and watch
_ _ _ _ _ signs. He must do many tasks. He reports to his
supervisor, Sam Huntley, who gives him orders for the day. He
works in all _ _ _ _ _ , P _ _ _ _ t
Line, Core Room, Cl _ _ _ _ _ Room and _ _ _ _ . He
sometimes must go to special places in the _ _ _ _ _
to _ _ _ _ _ of put _ _ _ _ _ away.

WORD LIST:

1. Buildings
2. Grounds
3. Foundry
4. trash
5. cleans
6. safety
7. departments
8. Pallet Line
9. Cleaning
10. EPS
11. materials

BUILDING AND GROUNDS-READING

Fill in the missing letters:

c _ _ _

c _ r _

c _ re

c _ _ e

_ _ _ e

E _ _

_ _ s

_ p _

_ ps

EP _

_ _ _ er _ _ l _

m _ t _ r _ a _ s

_ _ _ er _ _ l s

mat _ _ ials

m _ _ _ _ _ ls

PREACTIVITY FOR A to Z

1. _____st
2. b_____d
3. j k _____
4. x_____z
5. m n _____
6. _____f g
7. o p _____
8. h _____j
9. p _____r
10. _____v w
11. a b _____
12. _____j k
13. d _____f
14. _____x y
15. g h _____
16. s _____u
17. n _____p
18. e f _____
19. h i _____
20. t u _____

PREACTIVITY FOR ALPHABETICAL ORDER

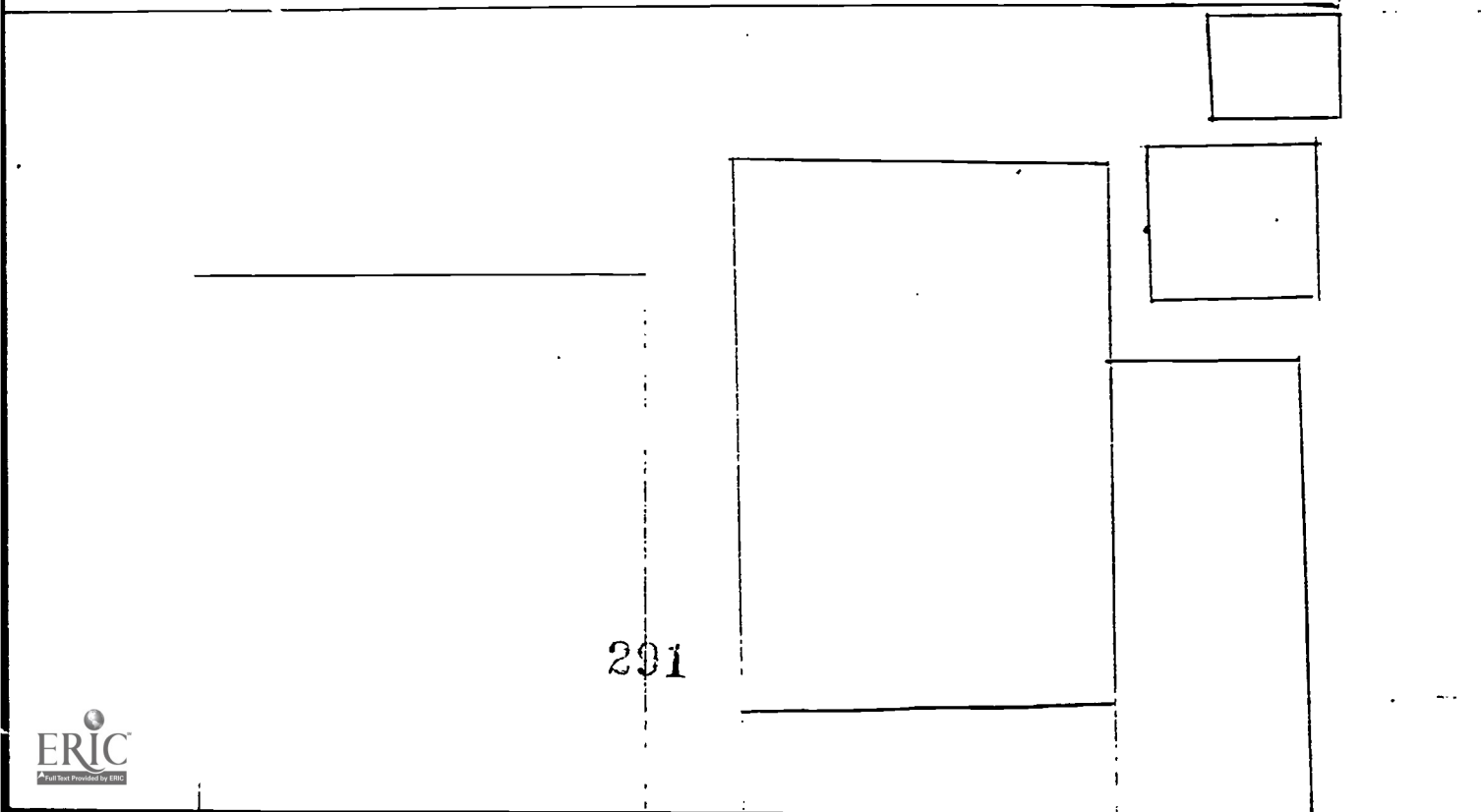
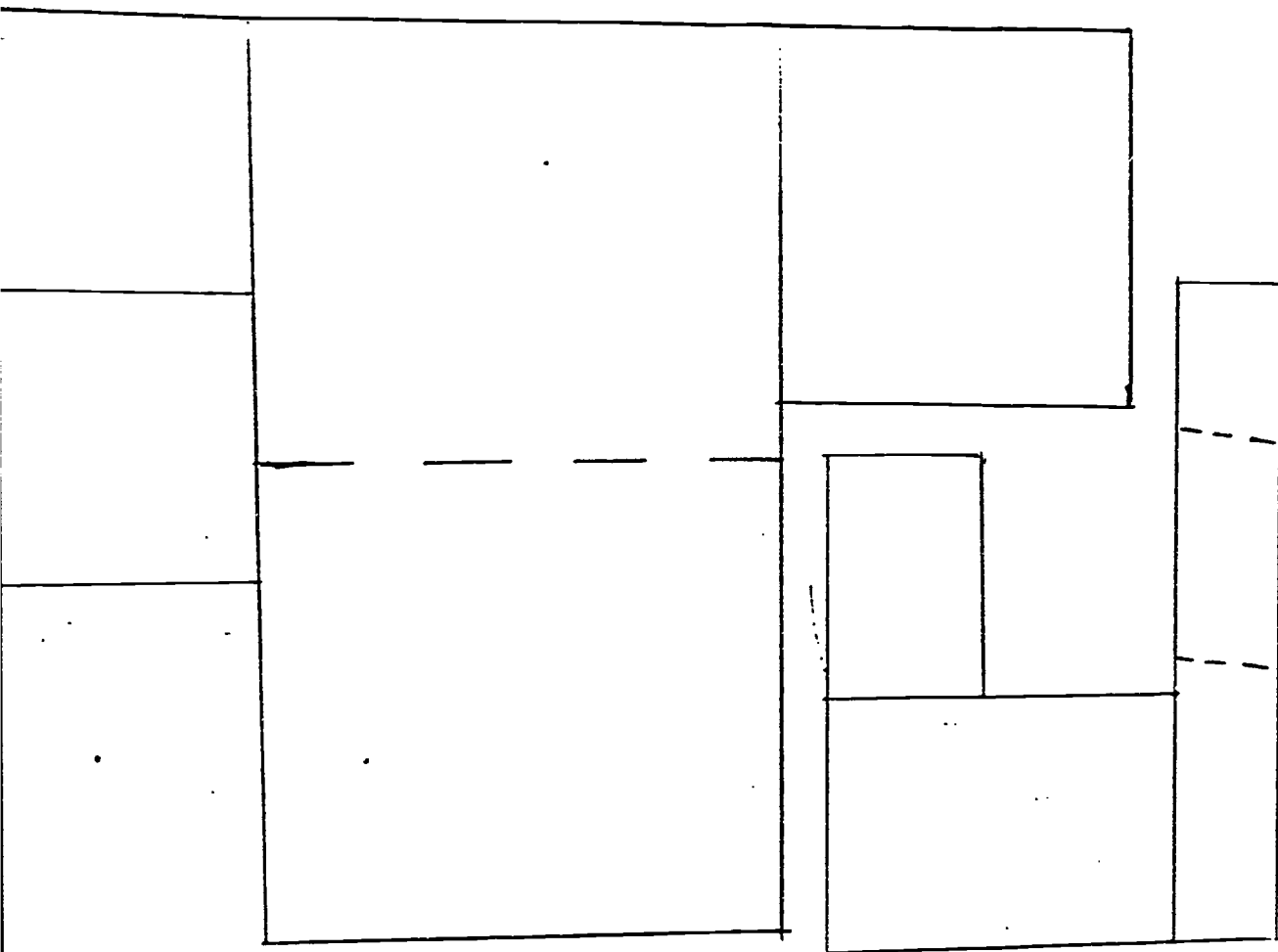
- 1. FLASK 1. _____
- 2. ACCIDENT 2. _____
- 3. CORE 3. _____
- 4. SAND 4. _____
- 5. PATTERN 5. _____

- 1. MOLD 1. _____
- 2. SLAG 2. _____
- 3. FIN 3. _____
- 4. EPS 4. _____
- 5. CASTING 5. _____

- 1. DEFECT 1. _____
- 2. SCRAP 2. _____
- 3. BP 3. _____
- 4. SAFETY 4. _____
- 5. HAMMER 5. _____

FIND THE DEPARTMENTS ON THE MAP

1. Personnel and Lab
2. Supply
3. Cleaning Room
4. Shipping
5. Pattern Shop
6. Iron Melting
7. EPS
8. Green Sand
9. Disa
10. Core Room
11. Storage
12. Storage
13. Maintenance
14. Security



345

JOB
A PARTNERSHIP BETWEEN EDUCATION AND INDUSTRY

CENTRAL ALABAMA COMMUNITY COLLEGE & ROBINSON FOUNDRY, INC.
1992

LESSON 12
MOLDING PRODUCTION SHEET

ROBERT E. STONE,
PROJECT DIRECTOR
205 234 6346 EXT 6217

WRITTEN BY:
SANDRA MAXWELL,
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205 329 8481 EXT 81

245

The **MOLDING PRODUCTION SHEET** is used in Green Sand
and in EPS.

Read the following pages to learn how to read and
fill out the **MOLDING PRODUCTION SHEET**.

235

235

The green boxes tell when the worker starts work and stops work in each hour.

The yellow boxes show the hours of the shift from the 1st hour to the 9th hour.

MOLDING PRODUCTION

MOLDER _____

DATE _____

SHIFT _____

Time	Start	Time Stop	Total Time	Machine	Casting Number	IMP.	MOLDS		CLASS IRON	DEPTH OF CHILL	DOWN TIME							COMMENTS									
							GOOD	PO *			Mo Iron	Mo Iron Spec	Mach. Sand	Wet Foam	Other												
1st	Hour					x																					
2nd	Hour					x																					
3rd	Hour					x																					
4th	Hour					x																					
5th	Hour					x																					
6th	Hour					x																					
7th	Hour					x																					
8th	Hour					x																					
9th	Hour					x																					
											TOT																
																		TOT									

* PO CAUSE	SUPERVISORS COMMENTS & REQUIRED CORRECTIVE ACTION
A. SAND	
B. MACHINE	
C. PATTERN	
D. OTHER	

200

200

The pink box tells the machine being used.

300

311

ROBINSON
FOUNDRY, INC.

MOLDING PRODUCTION

DATE _____ SHIFT _____

TIME START	TIME STOP	TOTAL TIME	MACHINE	CASTING NUMBER	IMP.	MOLDS		CLASS IRON	DEPTH OF CHILL	DOWN TIME							COMMENTS										
						GOOD	PO #			No. Iron	Iron Spills	Match	Core	Weld	Part	Other											
1st Hour					X																						
2nd Hour					X																						
3rd Hour					X																						
4th Hour					X																						
5th Hour					X																						
6th Hour					X																						
7th Hour					X																						
8th Hour					X																						
9th Hour					X																						
TOT																											

TOT

* PO CAUSE
 A - SAND
 B - MOLD
 C - PATTERN
 D - OTHER
 SUPERVISOR'S COMMENT & REQUIRED CORRECTIVE ACTION

309

3

The blue box shows which casting number is molded in each hour.

305

304

The orange box shows how many impressions are on the pattern.

303

303

ROBINSON
FOUNDRY, INC.

MOLDING PRODUCTION

DATE _____ SHIFT _____

MOLDER _____

TIME START	TIME STOP	TOTAL TIME	MACHINE	CASTING NUMBER	IMP.	MOLDS		CLASS IRON	DEPTH OF CHILL	TIME FROM	TIME TO	TOTAL TIME	DOWN TIME					COMMENTS	
						GOOD	PO						No Iron	Iron Spec	Hot Sand	Wet Foam	Other		
1st Hour					x														
2nd Hour					x														
3rd Hour					x														
4th Hour					x														
5th Hour					x														
6th Hour					x														
7th Hour					x														
8th Hour					x														
9th Hour					x														
TOT					x														

TOT

TOT

PO CAUSE	SUPERVISOR'S COMMENTS & REQUIRED CORRECTIVE ACTION
A. SAND	
B. MACHINE	
C. MOLDER	
D. OTHER	

310

311

The green box shows how many GOOD molds were made in each hour.

312

312

**ROBINSON
FOUNDRY, INC.**

MOLDING PRODUCTION

DATE _____ SHIFT _____

MOLDER _____

TIME START	TIME STOP	TOTAL TIME	MACHINE	CASTING NUMBER	IMP.	MOLDS		CLASS IRON	DEPTH OF CHILL	TIME FROM	TIME TO	TOTAL TIME	DOWN TIME				COMMENTS	
						GOOD	PO *						No Iron Spec.	Match	Hot Sand / Pattern	Hot		Other
1st Hour					x													
2nd Hour					x													
3rd Hour					x													
4th Hour					x													
5th Hour					x													
6th Hour					x													
7th Hour					x													
8th Hour					x													
9th Hour					x													
		TOT			x													

TOT

TOT

* PO CAUSE	SUPERVISORS COMMENTS & REQUIRED CORRECTIVE ACTION
A. SAND	
B. MACHINE	
C. PATTERN	
D. OTHER	

313

310

The yellow box tells how many "PLUG-OFFS" or bad molds were made in each hour.

The * shows the reason for the plug-off.

The pink box shows the plug-off reason and the supervisor comments.

ROBINSON
FOUNDRY, INC.

MOLDING PRODUCTION

DATE _____ SHIFT _____

MOLDER _____

DOWN TIME

TIME START	TIME STOP	TOTAL TIME	MACHINE	CASTING NUMBER	IMP.	MOLDS		CLASS IRON	DEPTH OF CHILL	TIME FROM	TIME TO	TOTAL TIME	DOWN TIME					COMMENTS						
						GOOD	PO *						No Iron Spec	Hot Iron Spec	Wet Sand	Wet Foam	Other							
1st Hour					x																			
2nd Hour					x																			
3rd Hour					x																			
4th Hour					x																			
5th Hour					x																			
6th Hour					x																			
7th Hour					x																			
8th Hour					x																			
9th Hour					x																			
					x																			
					x																			
					x																			
												TOT												

TOT

TOT

SUPERVISOR'S COMMENTS & REQUIRED CORRECTIVE ACTION

A-PO CAUSE
A-SAND
B-MACHINE
C-PATTERN
D-OTHER

The blue box shows the class of iron poured for each casting number.

321

321

12

ROBINSON
FOUNDRY, INC.

MOLDING PRODUCTION

DATE _____ SHIFT _____

MOLDER _____

TIME START	TIME STOP	TOTAL TIME	MACHINE	CASTING NUMBER	IMP.	MOLDS		CLASS IRON OF CHILL	TIME FROM	TIME TO	TOTAL TIME	DOWN TIME				COMMENTS		
						GOOD	PO *					No Iron Spec	Iron Spec	Mach Spd	Weld		Other	
1st Hour																		
2nd Hour																		
3rd Hour																		
4th Hour																		
5th Hour																		
6th Hour																		
7th Hour																		
8th Hour																		
9th Hour																		
											TOT							
											TOT							

* PO CAUSE	SUPERVISORS COMMENTS & REQUIRED CORRECTIVE ACTION
A. SAND	
B. MACHINE	
C. PATTERN	
D. OTHER	

TOTAL CASTING NUMBER

The orange box is the total castings made from the 1st hour through the 4th hour.

The worker found this number by multiplying the number of impressions (the green number) times the number of good molds (the yellow number).

The worker added the totals for the first 4 hours of work and put the answer in the orange box.

300

MOLDING PRODUCTION

DATE _____ SHIFT _____

TIME START	TIME STOP	TOTAL TIME	MACHINE	CASTING NUMBER	IMP.	MOLDS		CLASS IRON	DEPTH OF CHILL	DOWN TIME					COMMENTS		
						GOOD	PO *			No Iron Spec	Iron Spec	Hot Sand	Wet Foam	Other			
1st Hour					1 x	25											
2nd Hour					2 x	30											
3rd Hour					2 x	40											
4th Hour					1 x	20			185								
5th Hour					x												
6th Hour					x												
7th Hour					x												
8th Hour					x												
9th Hour					x												
										TOT							
										TOT							

* PO CAUSE
A- SAND
B- MACHINE
C- PATTERN
D- OTHER

_____ SUPERVISOR'S COMMENTS & REQUIRED CORRECTIVE ACTION

The pink box is the total castings made from the 5th hour through the 9th hour.

The worker found this number by multiplying the number of impressions (the blue number) times the good molds (the orange number).

The worker added the totals and put the answer in the pink box.

200

200

The green box shows the total number of castings made for the day.
The worker added the totals for the 4th hour (in orange) and for
the 9th hours (in pink). He put the answer in the pink box.

000

000

DOWN TIME

The yellow box shows the time a worker stops work.

The orange box shows the time a worker starts back to work.

The pink box shows the number of minutes the worker was not at work.

337

338

The blue boxes show the reason for each of the down times.

(4)

110

ROBINSON
FOUNDRY, INC.

MOLDER _____

SHIFT _____

DATE _____

MOLDING PRODUCTION

TIME START	TIME STOP	TOTAL TIME	MACHINE	CASTING NUMBER	IMP.	MOLDS		CLASS IRON	DEPTH OF CHILL	TIME FROM	TIME TO	TOTAL TIME	DOWN TIME					COMMENTS	
						GOOD	PO #						No Iron	Iron	Heat Sand	Heat Foundry	Other		
1st Hour					x														
2nd Hour					x														
3rd Hour					x														
4th Hour					x														
5th Hour					x														
6th Hour					x														
7th Hour					x														
8th Hour					x														
9th Hour					x														
TOT					x														

TOT

TOT

PO CAUSE
 A. SAND
 B. MACHINE
 C. PATTERN
 D. OTHER

SUPERVISOR'S COMMENTS & REQUIRED CORRECTIVE ACTION

610

The green box is a place for the worker to write a reason for any
down time that is not listed in the blue boxes.

344

344

**ROBINSON
FOUNDRY, INC.**

MOLDING PRODUCTION

MOLDER _____

DATE _____ SHIFT _____

TIME START	TIME STOP	TOTAL TIME	MACHINE	CASTING NUMBER	IMP.	MOLDS		CLASS IRON	DEPTH OF CHILL	TIME FROM	TIME TO	TOTAL TIME	DOWN TIME					COMMENTS						
						GOOD	PO *						NO PART	NO SPRAY	NO SAND	NO CORE	OTHER							
1st Hour					X																			
2nd Hour					X																			
3rd Hour					X																			
4th Hour					X																			
5th Hour					X																			
6th Hour					X																			
7th Hour					X																			
8th Hour					X																			
9th Hour					X																			
TOT																								

* PO CAUSE	SUPERVISORS COMMENTS & REQUIRED CORRECTIVE ACTION:
A. SAND	
B. MACHINE	
C. PATTERN	
D. OTHER	

047

040

Do the exercise on the next 2 pages to see how well you have learned to read the MOLDING

PRODUCTION SHEET.

Write your answers on your paper. Do not write in this booklet.

240

240

MOLDING PRODUCTION SHEET

DIRECTIONS: Answer the following questions about the MOLDING PRODUCTION SHEET filled out by George Smith on 5-15-91.

1. Which CASTING NUMBER has the most IMPRESSIONS on the pattern plate?
2. Which CASTING NUMBERS have the least IMPRESSIONS on the pattern plate?
3. In which hour were the most MOLDS made? How many castings were made in this hour?
4. In which hour were the least amount of MOLDS made? How many castings were made in this hour?
5. Which hour had the most PO? What was the cause?
6. Why was the work stopped at the following times?

4:30 _____
7:05 _____
10:13 _____
11:05 _____

7. What was the total DOWN TIME?
8. How many castings were made during the following hours?

1st Hour	_____	5th Hour	_____
2nd Hour	_____	6th Hour	_____
3rd Hour	_____	7th Hour	_____

TURN THE PAGE AND CHECK YOUR ANSWERS

ANSWERS

1. 300333
2. 63197787
3. The 3rd hour; 100
4. The 1st hour; 14
5. The 2nd hour; A (sand)
6. 4:30 no iron
7:04 pattern change
10:13 Electric Bull down
11:05 working on pattern
7. 54
8. 1st hour: 14
2nd hour: 25
3rd hour: 100
5th hour: 30
6th hour: 192
7th hour: 172

Now that you know how to read a **MOLDING PRODUCTION FORM**, do the exercise on the next 2 pages.

Ask your teacher for a blank **MOLDING PRODUCTION FORM** to use for the exercise.

Check your answers by the answer key at the end of the book.

THE MOLDING PRODUCTION SHEET

DIRECTIONS: Fill in a production sheet with the following information about each job.

Use your own name, your shift, and today's date.

THE FIRST JOB

You start work at 4:00. You work on the Hunter today. The first job is on CASTING NUMBER 201504. This casting has 2 impressions. This casting is made with 25 CLASS IRON.

Fill in the rest of the sheet using the following information:

1st hour:	GOOD MOLDS: 25	PO: 0	PO CAUSE: 0
2nd hour:	GOOD MOLDS: 30	PO: 0	PO CAUSE: 0
3rd hour:	GOOD MOLDS: 10	PO: 15	PO CAUSE: A

THE SECOND JOB

You start work on the second job at 7:00. This job is on CASTING NUMBER 40162P. This casting has 5 impressions. This casting is poured with 30-A CLASS IRON.

Fill in the rest of the sheet using the following information:

4th hour:	GOOD MOLDS: 55	PO: 0	PO CAUSE: 0
5th hour:	LUNCH		
6th hour:	GOOD MOLDS: 25	PO: 13	PO CAUSE: B

THE THIRD JOB

You start work on the third job at 12:00 noon. This job is on CASTING NUMBER R-153-E. This casting has 1 impression. This casting is poured with 25 CLASS IRON.

Fill in the rest of the sheet using the following information:

7th hour:	GOOD MOLDS:	85	PO:	0	PO CAUSE:	0
8th hour:	GOOD MOLDS:	95	PO:	0	PO CAUSE:	0
9th hour:	GOOD MOLDS:	75	PO:	22	PO CAUSE:	C

TOTALS

Add up the total molds through the 4th hour. Add up the total molds from the 6th hour through the 9th hour. Add up the total for the day's production.

DOWN TIME

DIRECTIONS: Fill out the DOWN TIME side with the following information:

5:05 to 5:22	NO IRON
6:15 to 6:45	DRY SAND
10:36 to 10:55	ELECTRIC BULL DOWN
11:11 to 11:35	WORKING ON PATTERN

TOTALS

Add up the TOTAL TIME for each DOWN TIME.

361

**ROBINSON
FOUNDRY, INC.**

MOLDING PRODUCTION

DATE _____ SHIFT _____

MOLDER _____

1st Hour	TIME START	TIME STOP	TOTAL TIME	MAC/MINE	CASTING NUMBER	IMP.	MOLDS		CLASS IRON	DEPTH OF CHILL	TIME FROM	TIME TO	TOTAL TIME	DOWN TIME				COMMENTS
							GOOD	PO *						No Pen Spec	Iron Mach	Hot Vent Band	Other	
	4:00	5:00		Hunter	901504	2*	25	25	25		5:05	5:22	17				✓	Dry Sand
2nd Hour	5:00	6:00			"	2*	30		"		6:15	6:45	30				✓	Electric Bull Down
3rd Hour	6:00	7:00			"	2*	10	15	A		10:36	10:55	19				✓	Working on pattern
4th Hour	7:00	8:00			40162P	5*	55	30A		405	11:11	11:35	24					
5th Hour	8:00	9:00				x												
6th Hour	9:00	10:00			"	5*	25	13	B									
7th Hour	10:00	11:00			R-153-E	1*	85	25										
8th Hour	11:00	12:00			"	1*	95		"									
9th Hour	12:00	13:00			"	1*	75	22C		380								
						x												
						x				785								
						x												
			TOT											TOT				
																		90

TOT 90

300

PO CAUSE	SUPERVISOR COMMENTS & REQUIRED CORRECTIVE ACTION
A. SAND	
B. MACH	
C. PATTERN	
D. OTHER	

CONGRATULATIONS!

You have learned how to read and fill out the **MOLDING PRODUCTION SHEET**.

If you have any questions, ask your teacher for help.

365

364

JOB

A PARTNERSHIP BETWEEN EDUCATION AND INDUSTRY

CENTRAL ALABAMA COMMUNITY COLLEGE & ROBINSON FOUNDRY, INC.
1992

LESSON 13
FORMS

ROBERT E. STONE,
PROJECT DIRECTOR
205 234 6346 EXT. 6217

WRITTEN BY:
SANDRA MANN,
INSTRUCTOR/COUNSELOR
205 329 8481 EXT 81

OCCUPATIONAL FORMS USED AT ROBINSON

To be a successful worker, you need to know how to read and understand occupational forms such as charts, graphs, tables, and forms. Robinson Foundry uses many different kinds of occupational forms every day. Charts, graphs, tables, and forms are used to record and store information about the work Robinson employees do each day.

It is important for you to know how to read and understand any occupational form that is used in your department. You also need to know how to write information on these forms.

Many occupational forms used at Robinson are in the form of a **CHART**.

A **CHART** is a way to show facts and figures so that you can see the information easily.

Look at the **CHARTS** on the next 6 pages to learn how to read occupational charts.



The blue boxes tell what is written in the boxes down below them.

SHELL CORE PRODUCTION

Date: _____ Shift: _____ Name: _____ Machine No.: _____

Time From - To	Core I.D. No.	Core Description	Core Weight	Imp/ Box	Machine Cycles	Pieces Made	Pieces Scrap	Down Time
1st Hour								
2nd Hour								
3rd Hour								
4th Hour								
5th Hour								
6th Hour								
7th Hour								
8th Hour								
9th Hour								

PM4/PROD0005

The pink boxes tell what is written in the rows across to the right.

SHELL CORE PRODUCTION

Date: _____ Shift: _____ Name: _____ Machine No.: _____

Time From - To	Core I.D. No.	Core Description	Core Weight	Imp/ Box ^x	Machine Cycles	Pieces = Made	Pieces Scrap	Down Time
1st Hour								
2nd Hour								
3rd Hour								
4th Hour								
5th Hour								
6th Hour								
7th Hour								
8th Hour								
9th Hour								

PMA/PRODD005



Look at the orange box where the two lines meet.

This shows how many pieces were made in the 5th hour.

SHELL CORE PRODUCTION

Date: _____ Shift: _____ Name: _____ Machine No.: _____

Time From - To	Core I.D. No.	Core Description	Core Weight	Imp/ x Box	Machine Cycles	Pieces Made	Pieces Scrap	Down Time
1st Hour								
2nd Hour								
3rd Hour								
4th Hour								
5th Hour								
6th Hour								
7th Hour								
8th Hour								
9th Hour								



Now that you know how to read a **CHART**, do the exercises on the next two pages.

Write your answers on your paper. Do not write in this booklet.

SHELL CORE PRODUCTION SHEET

Look at the **SHELL CORE PRODUCTION SHEET** on the next page. Answer the questions about that sheet. Write the answers on your paper.

1. What is the CORE I.D. NO. for the work done in the 5th hour?
2. How many PIECES were made in the 8th hour?
3. How many PIECES SCRAP were made in the 7th hour?
4. Jack went to lunch in the _____ hour.
5. The machine broke down in the _____ hour.
6. What is the CORE DESCRIPTION for the 1st hour?
7. What is the CORE WEIGHT for the 4th hour?
8. Core I.D. No. 1202963 has _____ IMPRESSIONS.
9. How many MACHINE CYCLES were run in the 2nd hour?

SHELL CORE PRODUCTION

Date: _____ Shift: _____ Name: _____ Machine No.: _____

Time From - To	Core I.D. No.	Core Description	Core Weight	Imp/ * Box	Machine Cycles	Pieces Made	Pieces Scrap	Down Time
1st Hour 4:00 - 5:00	5260260	Sump Pot	5 lbs	1	38	38	0	
2nd Hour 5:00 - 6:00	"	"	"	1	37	37	0	
3rd Hour 6:00 - 7:00	"	"	"	1	35	35	0	10 min Break
4th Hour 7:00 - 8:00	6321	Main Body	5.2 lbs	1	42	42	0	
5th Hour 8:00 - 9:00	"	"	"	1	21	21	2	30 min Lunch
6th Hour 9:00 - 10:00	"	"	"	1	41	41	0	
7th Hour 10:00 - 11:00	1202963	Main Body	5 lbs.	2	40	30	7	
8th Hour 11:00 - 12:00	"	"	"	2	23	16	8	35 min Machine Down
9th Hour 12:00 - 1:00	"	"	"	2	39	18	4	

Now that you know how to read a **CHART**, let's learn how to fill out to
a SHELL CORE PRODUCTION SHEET.

Get a blank SHELL CORE PRODUCTION SHEET from your teacher.

Turn the page to see how you fill out this form.

Look at the [redacted] lines. This is the place for the DATE, the SHIFT, the FULL NAME, and the Shell Core MACHINE NUMBER.

If you do not put your FULL NAME on the line, the computer will not give you credit for your work.

Fill in your practice sheet with the following:

DATE: put today's date
SHIFT: 1ST
NAME: write your own name
MACHINE NO.: 400

SHELL CORE PRODUCTION

Date: _____ Shift: _____ Name: _____ Machine No.: _____

Time From - To	Core I.D. No.	Core Description	Core Weight	Imp/ x Box	Machine Cycles	Pieces = Made	Pieces Scrap	Down Time
1st Hour								
2nd Hour								
3rd Hour								
4th Hour								
5th Hour								
6th Hour								
7th Hour								
8th Hour								
9th Hour								

Look at the blue box. This shows the time work begins and ends for each hour. The numbers show how this column should be filled in for the first shift.

Copy the numbers on your practice sheet.

SHELL CORE PRODUCTION

Date: _____ Shift: _____ Name: _____ Machine No.: _____

	Time From - To	Core I.D. No.	Core Description	Core Weight	Imp/ Box	Machine Cycles	Pieces = Made	Pieces Scrap	Down Time
1st Hour	4:00 - 5:00								
2nd Hour	5:00 - 6:00								
3rd Hour	6:00 - 7:00								
4th Hour	7:00 - 8:00								
5th Hour	8:00 - 9:00								
6th Hour	9:00 - 10:00								
7th Hour	10:00 - 11:00								
8th Hour	11:00 - 12:00								
9th Hour	12:00 - 1:00								

The orange numbers are the CORE I.D. NO.

The green words are the CORE DESCRIPTIONS.

These numbers and words are always filled in by the leadman.

Copy them on your practice sheet.

SHELL CORE PRODUCTION

Date: _____ Shift: _____ Name: _____ Machine No.: _____

Time From - To	Core I.D. No.	Core Description	Core Weight	Imp/Box	Machine Cycles	Pieces Made	Pieces Scrap	Down Time
1st Hour	5251697	Glue-In						
2nd Hour	"	"						
3rd Hour	"	"						
4th Hour	1273575	Body						
5th Hour	"	"						
6th Hour	"	"						
7th Hour	5263702	Stick						
8th Hour	"	"						
9th Hour	"	"						

The yellow box shows the CORE WEIGHT.

The worker weighs the first core he makes and writes the amount in this column.

Put these core weights on your practice sheet:

1st hour:	9.5 lbs.
2nd hour:	"
3rd hour:	"
4th hour:	1.5 lbs.
5th hour:	"
6th hour:	"
7th hour:	3 lbs.
8th hour:	"
9th hour:	"

SHELL CORE PRODUCTION

Date: _____ Shift: _____ Name: _____ Machine No.: _____

Time From - To	Core I.D. No.	Core Description	Core Weight	Imp/ Box	Machine Cycles	Pieces = Made	Pieces Scrap	Down Time
1st Hour								
2nd Hour								
3rd Hour								
4th Hour								
5th Hour								
6th Hour								
7th Hour								
8th Hour								
9th Hour								

The pink box shows the number of IMPRESSIONS in the core box.

Put these IMPRESSIONS on your practice sheet:

1st hour:	1
2nd hour:	1
3rd hour:	1
4th hour:	2
5th hour:	2
6th hour:	2
7th hour:	1
8th hour:	1
9th hour:	1

SHELL CORE PRODUCTION

Date: _____ Shift: _____ Name: _____ Machine No.: _____

Time From - To	Core I.D. No.	Core Description	Core Weight	Imp/Box	Machine Cycles	Pieces Made	Pieces Scrap	Down Time
1st Hour								
2nd Hour								
3rd Hour								
4th Hour								
5th Hour								
6th Hour								
7th Hour								
8th Hour								
9th Hour								



The blue box shows the number of MACHINE CYCLES.

The worker writes how many times he runs his machine a full cycle and makes one or more cores.

Put these MACHINE CYCLES on your practice sheet:

1st hour:	35
2nd hour:	34
3rd hour:	32
4th hour:	67
5th hour:	34
6th hour:	60
7th hour:	25
8th hour:	35
9th hour:	31

SHELL CORE PRODUCTION

Date: _____ Shift: _____ Name: _____ Machine No.: _____

Time From - To	Core I.D. No.	Core Description	Core Weight	Imp/Box ^x	Machine Cycles	Pieces Made	Pieces Scrap	Down Time
1st Hour								
2nd Hour								
3rd Hour								
4th Hour								
5th Hour								
6th Hour								
7th Hour								
8th Hour								
9th Hour								

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The green box shows the number of PIECES MADE in each hour.

The worker multiplies the orange numbers under IMP/BOX times the blue numbers under MACHINE CYCLES. He writes the answer in the yellow box under PIECES MADE. The 1st hour hour and the 4th hour are filled in to show you how to do this.

Fill in the rest of the PIECES MADE column on your practice sheet.

SHELL CORE PRODUCTION

Date: _____ Shift: _____ Name: _____ Machine No.: _____

Time From - To	Core I.D. No.	Core Description	Core Weight	Imp/ Box x	Machine Cycles	Pieces Made	Pieces Scrap	Down Time
1st Hour				1	35	35		
2nd Hour								
3rd Hour								
4th Hour				2	67	134		
5th Hour								
6th Hour								
7th Hour								
8th Hour								
9th Hour								

The pink box shows the number of PIECES SCRAP.

At the end of each hour the worker writes the number of scrap pieces he made.

Put these SCRAP numbers on your practice sheet:

1st hour:	0
2nd hour:	1
3rd hour:	3
4th hour:	10
5th hour:	4
6th hour:	6
7th hour:	0
8th hour:	0
9th hour:	0

SHELL CORE PRODUCTION

Date: _____ Shift: _____ Name: _____ Machine No.: _____

Time From - To	Core I.D. No.	Core Description	Core Weight	Imp/Box x	Machine Cycles	Pieces = Made	Pieces Scrap	Down Time
1st Hour								
2nd Hour								
3rd Hour								
4th Hour								
5th Hour								
6th Hour								
7th Hour								
8th Hour								
9th Hour								

The blue box shows the DOWN TIMES.

The worker writes in the amount of time he is not running his machine.
He also writes the reason for the DOWN TIME. The first DOWN TIME is
filled in to show you how to do this.

Put these DOWN TIMES on your practice sheet:

5th hour: 30 min lunch
7th hour: 15 min power off

TURN THE PAGE TO SEE IF YOUR PRACTICE SHEET IS CORRECT.

SHELL CORE PRODUCTION

Date: _____ Shift: _____ Name: _____ Machine No.: _____

Time From - To	Core I.D. No.	Core Description	Core Weight	Imp/ Box	Machine Cycles	Pieces Made	Pieces Scrap	Down Time
1st Hour								
2nd Hour								
3rd Hour								10 min Break
4th Hour								
5th Hour								
6th Hour								
7th Hour								
8th Hour								
9th Hour								

420

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PM4/PROD0005

SHELL CORE PRODUCTION

Date: _____ Shift: 1st Name: _____ Machine No.: 400

Hour	Time From - To	Core I.D. No.	Core Description	Core Weight	Imp/Box	Machine Cycles	Pieces Made	Pieces Scrap	Down Time
1st Hour	4:00-5:00	5257697	Glue In	9.5163	1	35	35	0	
2nd Hour	5:00-6:00	"	"	"	1	34	34	1	
3rd Hour	6:00-7:00	"	"	"	1	32	32	3	10 min. Break
4th Hour	7:00-8:00	1273575	Body	1.516	2	67	134	11	
5th Hour	8:00-9:00	"	"	"	2	34	68	4	30 min Lunch
6th Hour	9:00-10:00	"	"	"	2	60	120	6	
7th Hour	10:00-11:00	5263702	Stick	3.16r	1	25	25	0	15 min Power off
8th Hour	11:00-12:00	"	"	"	1	35	35	0	
9th Hour	12:00-1:00	"	"	"	1	31	31	0	

Get another blank Shell Core Production Sheet.

Turn the page and read about another day in the career of Jack Doss.

Fill in your blank sheet with Jack's work. If you need to, look back in the booklet for help in doing this exercise.

430

431

1st Hour through 3rd Hour

START WITH THE 1ST HOUR AND PUT THESE NUMBERS ON THE SHEET: Jack starts work at 5:00 on a 400 machine. The first job is Core I.D. No. 5267997. The leadman tells Jack to write "Body" under the description. The core weighs 4.02 pounds. The core box has 1 impression.

1st hour:	Machine cycles: 22	Scrap: 1
2nd hour:	Machine cycles: 23	Scrap: 0
3rd hour:	Machine cycles: 23	Scrap: 0

4th Hour through 6th Hour

START WITH THE 4TH HOUR AND PUT THESE NUMBERS ON THE SHEET: The 4th hour starts with a "body" core with the I.D. No. of 1273574/01. The core box has 2 impressions. It weighs 1.5 pounds.

4th hour:	Machine cycles: 67	Scrap: 0
5th hour:	Machine cycles: 65	Scrap: 4
6th hour:	Machine cycles: 25	Scrap: 5

7th Hour through 9th Hour

START WITH THE 7TH HOUR AND PUT THESE NUMBERS ON THE SHEET: The 7th hour starts with a Body core with the I.D. No. 5253741/01. The core weighs 30 pounds. There is 1 impression in the core box.

7th hour:	Machine cycles: 16	Scrap: 0
8th hour:	Machine cycles: 21	Scrap: 3
9th hour:	Machine cycles: 18	Scrap: 5

DID YOU REMEMBER TO MULTIPLY THE IMPRESSIONS TIMES THE CYCLES TO
FIND THE NUMBER OF PIECES MADE?

Down Time

Jack had the following Down Times. Put these times on the sheet.

7:15 to 7:25...10 minute break
10:00 to 10:30...30 minute lunch
12:07 to 12:23...16 minute power off

LOOK AT THE NEXT PAGE AND SEE IF YOUR SHEET IS CORRECT!

SHELL CORE PRODUCTION

Date: _____ Shift: _____ Name: Jack Doss Machine No.: 400

1st Hour	2nd Hour	3rd Hour	4th Hour	5th Hour	6th Hour	7th Hour	8th Hour	9th Hour	
Time From - To	5:00 - 6:00	6:00 - 7:00	7:00 - 8:00	8:00 - 9:00	9:00 - 10:00	10:00 - 11:00	11:00 - 12:00	12:00 - 1:00	1:00 - 2:00
Core I.D. No.	5267997	"	"	1273574/01	"	"	5253741/01	"	"
Core Description	Body	"	"	Body	"	"	Body	"	"
Core Weight	4.0 lbs	"	"	1.5 lbs	"	"	30 lbs	"	"
Imp/ * Box	1	1	1	2	2	2	1	1	1
Machine Cycles	22	23	23	67	65	25	16	21	18
Pieces = Made	22	23	23	134	130	50	16	21	18
Pieces Scrap	1	0	0	0	4	5	0	3	5
Down Time			10 min Break			30 min Lunch		16 min Power Off	

CONGRATULATIONS!

You have learned how to read and fill out one of the OCCUPATIONAL FORMS used at Robinson Foundry.

If you have any further questions, ask your teacher.

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CENTRAL ALABAMA COMMUNITY COLLEGE & ROBINSON FOUNDRY, INC.
1992

LESSON 14
GRINDING PRODUCTION SHEET

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WRITTEN BY:
BETH MAXWELL,
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205 329 8481 EXT 81

10/1/92

GRINDING PRODUCTION SHEET

The grinding production sheet is used in the cleaning room to keep a count of pieces ground. It is important to the worker to keep up with each number every hour.

In this booklet we are going to attempt to learn to find the parts of a grinding production sheet. The worker will learn to find the part by first coloring the part, next he will learn to fill in the part of the sheet.

Turn to the next page to learn about the first part of the grinding production sheet.

The Date is placed at the top of the grinding
production sheet. Color Date blue.

GRINDING PRODUCTION

DATE: _____ SHIFT: _____ WORK CENTER: _____

GRINDER(S): _____

CASTING NUMBER	PRODUCTION		TIME START	TIME STOP
	TOT. GROUND	TOT. SCRAP		



Fill in the date on each of the following sheets:

1. Date: 3/13/92
2. Date: 1/11/92
3. Date: 2/10/92
4. Date 1/17/92

GRINDING PRODUCTION

DATE: _____ SHIFT: _____ WORK CENTER: _____

GRINDER(S): _____

CASTING NUMBER	PRODUCTION		TIME START	TIME STOP
	TOT. GROUND	TOT. SCRAP		

The shift is placed at the top of each sheet.

Color the shift red:

GRINDING PRODUCTION

DATE: _____ SHIFT: _____ WORK CENTER: _____
GRINDER(S): _____

CASTING NUMBER	PRODUCTION		TIME START	TIME STOP
	TOT. GROUND	TOT. SCRAP		

PM4/PROD0009/061191



Fill the shift in for each sheet:

1. Shift: 1st
2. Shift: 2nd
3. Shift: 3rd
4. Shift: 2nd

GRINDING PRODUCTION

DATE: _____ SHIFT: _____ WORK CENTER: _____

GRINDER(S): _____

CASTING NUMBER	PRODUCTION		TIME START	TIME STOP
	TOT. GROUND	TOT. SCRAP		



In the cleaning room there are different areas for each grinders. These are called work centers. Color work center on the sheets-yellow.

GRINDING PRODUCTION

DATE: _____ SHIFT: _____ WORK CENTER: _____

GRINDER(S): _____

CASTING NUMBER	PRODUCTION		TIME START	TIME STOP
	TOT. GROUND	TOT. SCRAP		



Also in the cleaning room there are many different kinds of grinders. Look at the top of the sheet and color the word grinders-purple.

GRINDING PRODUCTION

DATE: _____ SHIFT: _____ WORK CENTER: _____

GRINDER(S): _____

CASTING NUMBER	PRODUCTION		TIME START	TIME STOP
	TOT. GROUND	TOT. SCRAP		



In working with castings, all castings have a number. The numbers are marked somewhere on the casting. Color column marked casting number-black.

Now fill in the following casting numbers on the other sheet:

1. 56044
2. 40424
3. 24816
4. 06F141000

GRINDING PRODUCTION

DATE: _____ SHIFT: _____ WORK CENTER: _____

GRINDER(S): _____

CASTING NUMBER	PRODUCTION		TIME START	TIME STOP
	TOT. GROUND	TOT. SCRAP		

ToT. ground means the total number of castings that
grinder grinds. Color ToT. ground on your sheet-green.

GRINDING PRODUCTION

DATE: _____ SHIFT: _____ WORK CENTER: _____

GRINDER(S): _____

CASTING NUMBER	PRODUCTION		TIME START	TIME STOP
	TOT. GROUND	TOT. SCRAP		



On each line under ToT. ground the grinder
writes the number ground of that casting number. Please
fill in on each line each of the following numbers
ground:

1. 525

2. 200

3. 100

4. 225

Tot. scrap means number that was no good in

Tot. ground. These must be remelted. Color Tot. scrap column on

the following sheet-orange.

400

GRINDING PRODUCTION

DATE: _____ SHIFT: _____ WORK CENTER: _____

GRINDER(S): _____

CASTING NUMBER	PRODUCTION		TIME START	TIME STOP
	TOT. GROUND	TOT. SCRAP		



On each line under Tot. scrap are filled in the number
of scrap the grinder finds each casting number. Please fill in
each number on each line under Tot. scrap:

1. 10

2. 25

3. 40

4. 60

GRINDING PRODUCTION

DATE: _____ SHIFT: _____ WORK CENTER: _____

GRINDER(S): _____

CASTING NUMBER	PRODUCTION		TIME START	TIME STOP
	TOT. GROUND	TOT. SCRAP		



All time on sheets must be kept. Time start means the time you begin to work on each casting. Color Time start column-pink.

GRINDING PRODUCTION

DATE: _____ SHIFT: _____ WORK CENTER: _____

GRINDER(S): _____

CASTING NUMBER	PRODUCTION		TIME START	TIME STOP
	TOT. GROUND	TOT. SCRAP		

On each line under Time start the grinder is to place
the time he begins to work on each casting. On each line
under Time start please fill in the following times:

1. 4:00 A.M.

2. 5:00 A.M.

3. 6:00 A.M.

4. 8:00 A.M.

GRINDING PRODUCTION

DATE: _____ SHIFT: _____ WORK CENTER: _____

GRINDER(S): _____

CASTING NUMBER	PRODUCTION		TIME START	TIME STOP
	TOT. GROUND	TOT. SCRAP		



Time stop means the time the grinder stops has grinding
on a certain casting number. Color time stop column-brown.

GRINDING PRODUCTION

DATE: _____ SHIFT: _____ WORK CENTER: _____

GRINDER(S): _____

CASTING NUMBER	PRODUCTION		TIME START	TIME STOP
	TOT. GROUND	TOT. SCRAP		



On each line under Time stop each grinder must

place the time he stops. Please fill in the following times

on each line:

1. 5:00 A.M.

2. 6:00 A.M.

3. 7:00 A.M.

4. 9:30 A.M.

GRINDING PRODUCTION

DATE: _____ SHIFT: _____ WORK CENTER: _____

GRINDER(S): _____

CASTING NUMBER	PRODUCTION		TIME START	TIME STOP
	TOT. GROUND	TOT. SCRAP		

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Now let's try filling out all the material on the grinding production sheet. Fill in the following items on the sheet:

1. For casting number 09SF1112, fill in total amount ground 85 with total scrap of 18. The grinder started grinding at 5:00 A.M. and stopped at 6:15 A.M. Fill in the grinding production sheet.

2. Casting number 08EG2233 was started at 9:00 A.M. and stopped at 10:15 A.M. There were 35 ground and 8 scraped. Fill in the grinding production sheet.

GRINDING PRODUCTION

DATE: _____ SHIFT: _____ WORK CENTER: _____

GRINDER(S): _____

CASTING NUMBER	PRODUCTION		TIME START	TIME STOP
	TOT. GROUND	TOT. SCRAP		



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1992

LESSON 15
RF VOCABULARY

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474

Contents in this Learning Package

RF Vocabulary (for early readers)

1. Pretest

Trainee is given list of pairs of words. Instructor reads one word of each pair, which the trainee is to circle.

2. Hear-and-see exercise

Trainee listens to an audio tape which reads the list of vocabulary words, and then reads sentences using the vocabulary words. Trainee 'reads along' on with cards.

(Trainee is given list of vocabualry words to take home.)

3. Alphabetizing exercise (trainee can refer to master list of vocabulary words)

Trainee draws lines to show correct alphabetical order of a printed list of vocabulary words.

4. Matching exercises

- a. Trainee draws line from each vocabulary word to its match, choosing from a pair of words in each case.
- b. Same as 4a, but more difficult because of similarity of paired words.

5. Underlining exercises

- a. Trainee underlines the vocabulary words in familiar sentences.
- b. Same as 5a, but more difficult because sentences are mixed up.

6. Fill-in-the-blank exercises

- a. Trainee fills in vocabulary words which have been left out of familiar sentences.
- b. Same as 6a, but more difficult because sentences are mixed up.

7. Narrative exercises (after listening to audio tape)
 - a. Trainee finds and circles vocabulary words in narrative paragraphs.
 - b. Trainee fills in vocabulary words in cloze exercise.
 - c. Trainee answers multiple choice questions based.
8. Post test (same as pre test)

Pre test and Post test

1. ant
Alex City
2. boy
BP Machine
3. Coca Cola
core
4. Dadeville
DANGER =
5. EPS
elephant
6. foundry
football
7. green
green sand
8. heat
Hardee's
9. IRS
iron
10. July
January

- 11. K-Mart
Kentucky Fried Chicken

- 12. lost
lost foam

- 13. McDonald's
mold

- 14. No Smoking Area
N Street

- 15. OK
October

- 16. pay check
pattern

- 17. quality control
quiet zone

- 18. Robinson - Bodine
Robinson Foundry

- 19. STOP
Saturday

- 20. telephone
taxes

21. B Street
U Street
22. V-8 engine
vegetables
23. Wal-Mart
wildcats
24. x-ray
x-rated movie
25. you
yes
26. zebra
zero

2. Vocabulary List

A	Alex City	1
B	BP machine	2
C	core	3
D	DANGER	4
E	EPS	5
F	foundry	6
G	green sand	7
H	heat	8
I	iron	9
J	July	10
K	Kentucky Fried Chicken	11
L	lost foam	12
M	McDonald's	13
N	No Smoking Area	14
O	OK	15
P	pattern	16
Q	quality control	17
R	Robinson Foundry	18
S	STOP	17
T	taxes	20
U	U Street	21
V	V-8 engine	22
W	Wal-Mart	23
X	x-ray	24
Y	you	25
Z	zero	26

2. Sentences Using Vocabulary Words

I live in Alex City.
I work on the BP Machine.
Run a core on this job.

The sign says 'Danger'.
I work in the EPS Department.
I work in a foundry.

I work on the Green Sand line.
We heat the iron.
We heat the iron.

We eat fried chicken on July 4th.
We eat Kentucky Fried Chicken on July 4th.
I work on the lost foam process.

We eat at McDonald's.
McDonald's has a No Smoking Area.
It's CK to smoke in the parking lot.

The pattern number is 346036.
I work in the Quality Control Department.
I work at Robinson Foundry.

The sign says 'STOP'.
You can't stop taxes.
The sign says 'U Street'.

That Ford has a V-8 engine.
That Ford is parked outside Wal-Mart.
Get an x-ray at the Alex City Hospital.

You can't stop taxes.
Five, four, three, two one, zero.

3. Alphabetizing exercise

Alex City
core
BP machine

EPS
foundry
DANGER

heat
green sand
iron

Kentucky Fried Chicken
lost-foam
July

McDonald's
OK
No Smoking Area

Robinson Foundry
quality control
pattern

STOP
U Street
taxes

V-8 engine
X-ray
Wal-Mart

zero
you

4a. Matching

- | | |
|---------------|---------------------|
| 1. Alex City | ant
Alex City |
| 2. BP Machine | boy
BP Machine |
| 3. core | Coca Cola
core |
| 4. DANGER | Dadeville
DANGER |
| 5. EPS | EPS
elephant |
| 6. foundry | foundry
football |
| 7. green sand | green
green sand |
| 8. heat | heat
Hardee's |
| 9. iron | IRS
iron |
| 10. July | July
January |

11.	Kentucky Fried Chicken Chicken	K-Mart Kentucky Fried Chicken
12.	lost foam	lost lost foam
13.	mold	McDonald's mold
14.	No Smoking Area	No Smoking Area N Street
15.	OK	OK October
16.	pay check	pay check pattern
17.	quality control	quality control quiet zone
18.	Robinson -Bodine	Robinson - Bodine Robinson Foundry
19.	STOP	STOP Saturday
20.	taxes	telephone taxes

- | | |
|----------------|--------------------------|
| 21. U Street | B Street
U Street |
| 22. V-8 engine | V-8 engine
vegetables |
| 23. Wal-Mart | Wal-Mart
wildcats |
| 24. x-ray | x-ray
x-rated |
| 25. you | you
gun |
| 26. zero | zebra
zero |

4b. Matching

- | | |
|---------------|----------------------------|
| 1. Alex City | apple pie
Alex City |
| 2. BP Machine | Coke machine
BP Machine |
| 3. core | care
core |
| 4. DANGER | dogwood
DANGER |
| 5. EPS | EPS
IBM |
| 6. foundry | foundry
family |
| 7. green sand | gray sand
green sand |
| 8. heat | heat
he |
| 9. iron | wine
iron |
| 10. July | July
June |

11. Kentucky Fried Chicken	K-Mart Kentucky Fried Chicken
12. lost foam	time lost foam
13. McDonald's	McDonald's McDougall's
14. No Smoking Area	No Smoking Area No Parking Zone
15. OK	OK oh
16. pattern	pay check pattern
17. quality control	quality control high quality
18. Robinson -Bodine	Robinson family Robinson Foundry
19. STOP	STOP Start
20. taxes	taxis taxes

21. U Street	D Street U Street
22. V-8 engine	V-8 engine V-6 engine
23. Wal-Mart	Wal-Mart wishing well
24. x-ray	x-ray x-rays
25. you	you yes
26. zero	zoo zero

5a. Underlining

I live in Alex City.
I work on the BP Machine.
Run a core on this job.

The sign says 'Danger'.
I work in the EPS Department.
I work in a foundry.

I work on the Green Sand line.
We heat the iron.
We heat the iron.

We eat fried chicken on July 4th.
We eat Kentucky Fried Chicken on July 4th.
I work on the lost foam process.

We eat at McDonald's.
McDonald's has a No Smoking Area.
It's OK to smoke in the parking lot.

The pattern number is 346036.
I work in the Quality Control Department.
I work at Robinson Foundry.

The sign says 'STOP'.
You can't stop taxes.
The sign says 'U Street'.

That Ford has a V-8 engine.
That Ford is parked outside Wal-Mart.
Get an x-ray at the Alex City Hospital.

You can't stop taxes.
Five, four, three, two one, zero.

5b. Underlining

We eat at McDonald's.
We heat the iron.
I work on the BP Machine.

The sign says 'Danger'.
I live in Alex City.
I work in a foundry.

The pattern number is 346036.
We heat the iron.
That Ford is parked outside Wal-Mart.

I work in the Quality Control Department.
I work in the EPS Department.
We eat fried chicken on July 4th.

You can't stop taxes.
Five, four, three, two one, zero.
I work on the Green Sand line.

McDonald's has a No Smoking Area.
It's OK to smoke in the parking lot.
That Ford has a V-8 engine.

I work at Robinson Foundry.
I work on the lost foam process.
The sign says 'STOP'.

The sign says 'U Street'.
You can't stop taxes.
Get an x-ray at the Alex City Hospital.

We eat Kentucky Fried Chicken on July 4th.
Run a core on this job.

6a. Fill-in-the-blank

I live in _____.
I work on the _____.
Run a _____ on this job.

The sign says _____.
I work in the _____ Department.
I work in a _____.

I work on the _____ line.
We _____ the iron.
We heat the _____.

We eat fried chicken on _____ 4th.
We eat _____ on July 4th.
I work on the _____ process.

We eat at _____.
McDonald's has a _____.
It's _____ to smoke in the parking lot.

The _____ number is 346036.
I work in the _____ Department.
I work at _____.

The sign says _____.
You can't stop _____.
The sign says _____.

That Ford has a _____.
That Ford is parked outside _____.
Get an _____ at the Alex City Hospital.

_____ can't stop taxes.
Five, four, three, two one, _____.

6b. Fill-in-the-blank

We heat the _____.
I live in _____.
I work in the _____ Department.

We eat at _____.
The sign says _____.
I work in a _____.

You can't stop _____.
We _____ the iron.
It's _____ to smoke in the parking lot.

I work on the _____ _____.
We eat fried chicken on _____ 4th.
I work in the _____ _____ Department.

I work on the _____ _____ process.
That Ford is parked outside _____.
Get an _____ at the Alex City Hospital.

McDonald's has a _____ _____ _____.
Run a _____ on this job.
The _____ number is 346036.

I work at _____ _____.
I work on the _____ _____ line.
The sign says _____.

The sign says _____ _____.
We eat _____ _____ _____ on July 4th.
That Ford has a _____ _____.

_____ can't stop taxes.
Five, four, three, two one, _____.

7a. Narrative

1.

I live in Alex City and work at a foundry. Some of the departments at Robinson Foundry are the Green Sand line, EFS, and Quality Control. A sign says 'DANGER' near where we heat the iron.

The first job for the BP Machine today had a core in the mold. That job's pattern number was 346036.

2.

Five, four, three, two, one, zero.

3.

I live in Alex City on U Street. I drive a V-8 Ford. I work at Wal-Mart and eat at McDonald's and Kentucky Fried Chicken. Both places are OK to eat at.

I can read signs. The sign at the end of the street says 'STOP'. Signs at the Alex City hospital say 'No Smoking Area', and 'X-ray' machine.

4.

The year has these months in it: January, February, March, April, May, June, July, August, September, October, November, December. In January I file my taxes with the IRS. Then I have zero dollars left.

7.b Narrative fill-in-the-blank

1.

I live in _____ City and work at a foundry. Some of the departments at Robinson _____ are the Green _____ line, EPS, and Quality Control. A sign says _____ near where we heat the iron.

The first job for the BP _____ today had a core in the mold. That job's _____ number was 346036.

2.

Five, four, three, two, one, _____.

3.

I live in Alex City on U _____. I drive a _____ Ford. I work at Wal-_____ and eat at McDonald's and _____ Fried Chicken. Both places are _____ to eat at.

I can _____ signs. The _____ at the end of the street says 'STOP'. Signs at the Alex _____ hospital say 'No _____ Area', and 'X-ray' machine.

4.

The year has these months in it: January, February, _____, April, May, June, _____, August, September, October, November, December. In January I file my _____ with the IRS. Then I have _____ dollars left.

7c. Narrative Multiple Choice

I

1. I live
 - a. in Alex City.
 - b. in Robinson Foundry.
2. I work
 - a. at Alex City Hospital.
 - b. at Robinson Foundry.
3. EPS
 - a. is a department.
 - b. is where we heat the iron.
4. The job's pattern number
 - a. was 346222.
 - b. was 346036

II

1. Five, four
 - a. three
 - b. zero
2. one + three =
 - a. five
 - b. four

III

1. I live
 - a. in Alex City.
 - b. in the machine.
2. I eat at
 - a. Wal-Mart
 - b. McDonald's
3. The sign at U Street says
 - a. 'STOP'
 - b. 'x-ray machine'

4. The sign at Alex City Hospital says

- a. 'DANGER'
- b. 'x-ray machine'

IV

1. January, February

- a. July
- b. March

2. I file my taxes with

- a. the IBM.
- b. the IRS.

3. October, November

- a. June
- b. December