ABSTRACT
       The field tested construction industry-related
mathematics unit is intended to familiarize seventh grade students
with various facets of the construction industry, including the
various occupations available and the mathematical abilities and
other skills and training necessary to pursue an occupation in the
industry. The final set of activities of the unit gives students an
opportunity to plan a house and to compute the approximate cost of
their "dream house." Opportunity is also provided for the students to
work with various construction industry-related mathematics problems.
The unit takes 15 hours of teaching time and includes whole class,
small group, and individual activities. Four performance objectives
are presented, with suggestions for accompanying learning activities,
student evaluation, and enrichment activities. Half of the document
consists of various student worksheets and a media and resource list.
(Author/BP)

CONSTRUCTION INDUSTRY RELATED MATHEMATICS

SEVENTH GRADE

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1975

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Studies over the past five years within Arizona show
parents as the most influential sources of the student's
occupational and educational choices. Because of parent
influence and the community interest in career education,
it is strongly recommended that the content of this unit
be reviewed with parent advisory groups.

CONSTRUCTION/RELATED MATH
INDUSTRY

This instructional unit, which relates to the Arizona Career Education outcomes, has been field tested in the State of Arizona. A detailed report of the field test results is available upon request.

This unit is a suggested procedure. Future users of the unit should review the unit in its entirety paying particular attention to the content of each activity and noting when, during their teaching year, it is best to be taught. Feel free to adapt it to meet the needs of your particular students and situation.

The following are suggestions made by field test teachers:

It was suggested that a short introductory lesson on metrics preceed this unit.

It was also suggested that the unit might be more beneficial at the 7th or 8th grade level.

CONSTRUCTION INDUSTRY RELATED MATHEMATICS

GRADE LEVEL: 7th Grade

DESCRIPTION OF UNIT:

This unit is intended to familiarize students with various facets
of the construction industry, including the various occupations available
and the skills and training necessary to pursue an occupation in the
industry. The final set of activities of the unit gives students an
opportunity to plan a house and to compute the approximate cost of
their "dream house." Opportunity is also provided for the students
to work with various construction industry related mathematics problems.

GOAL STATEMENT:

1.0 To familiarize students with the mathematical abilities necessary
for employment in the construction industry, the careers available
in the industry, and the general school related abilities, talents,
training, and other qualities required of workers in the industry.

APPROXIMATE TEACHING TIME: 15 hours

SUGGESTED GROUPINGS: Whole class, small groups, individuals.

MATERIALS REQUIRED:

1. Films on the construction industry (see films list).
2. Books, magazines, comic books, and leaflets on the construction
    industry (exact list will vary from school to school depending
    on what materials are locally available.)
3. Brochures
4. Manuals relating to the construction industry.
5. Want ads from local newspapers.
6. Job applications from local employers.
7. Metric rulers, graduated in centimeters.
8. Meter sticks.
9. Local telephone book - yellow pages.

PERFORMANCE OBJECTIVE:

1.1 When directed the learner will list in writing a minimum of two
different jobs in the construction industry and list at least three
math and three general skills required in each occupation listed.

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ACTIVITIES:

1.1.1 As an introductory activity to the unit the teacher should
duplicate sufficient copies of Student Sheet #1, and pass these out
to the students. The teacher should then discuss the various abilities
and categories contained on the sheet with the students and attempt to
motivate ongoing disucssions wherever possible. It should be made clear
to the students that the material contained on this sheet is only a
set of starting points and that there are many more abilities utilized
in the industry. At the end of the activity and at any other points
while the activity is in process, students should be encouraged to
go the sheet one better and contribute their own ability suggestions.

ìe teacher should stress the relation of school subjects to the world
of work, and encourage the students to make their own discoveries in
this relation.

1.1.2 The teacher should obtain an appropriate film or filmstrip on
the construction industry (several are listed in the suggested media
list) and present it to the class. Before viewing the media the learner
should be given the following directions:

"As you watch this film/filmstrip, I want you to make
a list of the following things:"

1. List all of the different jobs in the construction in-
   dustry that are shown in the film.

2. List each math skill you see being used and each appli-
   cation of math shown.

3. List any other school related skills you see being used
   in the film and what subject area they relate to.

4. List any other "general" types of skills or abilities
   you see being used which you do not feel fit under any
   of the other categories.

1.1.3 Instructor discusses the film with the students, and the class
as a whole composes a list of:

1. All occupations portrayed in the film.
2. All math skills shown in the film.
3. All other school related skills shown in the film.
4. All general skills which can't be listed under the other
   categories.

1.1.4 The instructor should obtain all available books, magazines, brochures and manuals on the construction industry. If they are available, one or more of the SRA Occupational Kits such as W.O.R.K., O.E.K., or Career Information Kit should also be procured. These materials should be placed in a central location in the classroom for student use in the following activity. Note: If available, an "Dictionary of Occupational Titles" (D.O.T.) or an "Occupational Outlook Handbook" will be excellent resources for this set of activities.

1.1.5 Each learner should now choose at least two occupations in the construction industry and carry out an independent research aimed at procuring the information necessary to give a class report based on Student Sheet #1. The information for this report may be obtained from the reference materials assembled in Activity 1.1.4 or from interviews of professional construction workers.

1.1.6 Each student gives a report on at least one of the occupations he has researched. The teacher should attempt to assign the reports so as to minimize duplication of report occupations as far as possible. After he has given his report, the student should hand in both reports. The teacher should save these as they will be necessary for the evaluation activity that follows. Students should be instructed to take notes on each other's reports and notified that they will be tested on this material later.

EVALUATION:

1.1.1.1 Teacher has the learners complete "Evaluation Sheet #1" independently. Since each student will be researching occupations of their own choice, it is impossible to provide an answer key for this evaluation. The student report sheets collected in Activity 1.1.6, however, will provide all necessary information for student performance evaluation if the teacher does not have sufficient know- ledge of any given occupation. This evaluation should be done "closed book" after all of the above activities are completed.

ENRICHMENT ACTIVITIES:

A. The teacher might wish to invite one or more speakers from the construction industry to speak to the class. These speakers should be asked to cover the general topics contained in "Student Sheet #1" during the course of their presentations.

B. An additional film or films might be shown covering the construction industry.

C. If possible, a field trip might be taken to a construction site to give the students first hand experience.

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D. At teacher descretion, students may be asked to research more than
    two occupations in Activity 1.1.5.

PERFORMANCE OBJECTIVE:

1.2 Upon request the student will be able to list in writing a
minimum of five personal selling points/qualifications that would aid
him in securing a job in the construction industry.

ACTIVITIES:

1.2.1 In preparation for the following activities, the teacher should
complete the following preparation activities:

1. Have students clip want ads from the local newspapers which
    advertise locally available positions in the construction in-
    dustry and bring them to class.

2. Either the students or the teacher should contact local con-
    struction firms, employment agencies, construction unions,
    and other businesses related to the construction industry
    and secure job applications forms (in multiple copies if
    possible). The State Employment Service might be a valuable
    resource in this regard. Unions have been found to be very
    valuable.

3. The teacher should select one or two locally available films
    on, or related to job placement. These should include, if
    possible, one or both of the films listed in the media list,
    but if these films are not locally available, reasonable
    substitutes may be used.

1.2.2 Show one or two films or filmstrips on job placement or secur-
ing a job. Films listed for this activity are included in the film
list at the end of the unit. If none of these films are locally avail-
able, reasonable substitutes may be used.

After the films have been viewed, the teacher should discuss with the
students the general procedures necessary for obtaining a job in the
construction industry (locating openings, answering advertisements,
submitting resumes, filling out job applications and interviewing
techniques.)

The teacher should at this time also discuss with the class the concept
of "personal selling points". These are individual personal character-
istics (neatness, good health, sense of humor, industriousness, etc.),
personal skills, training or talents which need to be brought to the
attention of prospective employers in order to increase their interest
in an applicant. These "personal selling points" can involve many
things, depending on the job, but basically they are the things that
tend to make a given individual more or less suited for a given job.

It should be stressed to the students that it is necessary to take these "selling points" into account when applying for a job. They should select and stress those traits or talents that they think an employer would find attractive and minimize the traits that an employer would find unattractive.

SPECIAL NOTE:

If the necessary media is not available or if the teacher simply wishes to expand this activity it would be worthwhile to invite a resource speaker to speak to the class on "personal selling points" which are helpful in procuring and keeping a job in the construction industry. This resource speaker might be contacted through a local construction industry related union, a contractor or construction company. It is also highly likely that one of your own students has a parent in this industry so check there first.

Beforehand, these speakers should be briefed on what types of things you would like them to cover and be given sufficient time to prepare their presentation. After the speaker has made a presentation, the same types of things should be discussed as outlined in the regular activity above.

1.2.3 The teacher should select one or two of the want ads collected earlier, and using these as a basis, conduct a class discussion with the aim of compiling a class list of "selling points" and "non-selling points" for each job opening selected. Student suggestions should be freely accepted and then a group concensus should be reached as to their classification.

1.2.4 The construction industry job applications obtained previously should now be distributed to the class. If there are a variety of applications available, students should be allowed to choose the application for the job they are most interested in. If no applications are available a sample application is provided in the Appendix which may be reproduced and utilized in this activity. Each student should then complete an application, in total, with teacher assistance if necessary.

After the applications are completed, the teacher should review each application with the student to make sure they are completed correctly. Students should then be instructed to analyze the job application they filled out to determine what the "personal selling points" for that occupation are. It should be brought to the attention of the students that usually an application is nothing more than an employer's way of determining an applicant's qualifications for a job, i.e., "personal selling points".

After all students have finished their analysis in writing, the teacher should ask either all students or selected students to describe their analysis for the class. These analysis should then be discussed.

ENRICHMENT ACTIVITY:

In conjuction with Activity 1.2.2 the teacher may wish to have one or more of the students do research on the construction unions and their related training programs. These students should then report their findings to the class.

EVALUATION:

1.2.1.1 Using Evaluation Sheet #2 the students should be asked to choose one of the want ads collected earlier and write a brief letter to the employer listing their qualifications ("selling points") for the job. Each student must include at least five of these personal selling points. Evaluation should not be conducted on letter form, but rather on the number of "selling points" the student is able to include. The desired number is five.

If a student has listed at least five personal selling points and those listed are considered reasonable by the teacher, the student can be considered to have accomplished the objective.

NOTE:

The list on "Evaluation Sheet #2" is for teacher convenience. Students should either be asked to read their letter to the class or the teacher should read them.

PERFORMANCE OBJECTIVE:

1.3 The student will perform all necessary procedures involved in planning a house and computing the approximate cost of a house with 80% accuracy as evaluated by the teacher checklist provided.

ACTIVITIES:

1.3.1 In order to introduce the students to the activities which follow in this section the teacher should ask the students to measure various actual existing structures with which they are already familiar. The teacher should begin this activity by dividing the class into groups of 3 - 4 students, issuing each a meter stick and then having them measure various structures around the school and record their measurements. The class should then get together and discuss their findings. Such questions as: How big are the classrooms? How big are the restrooms? How big is the office? and so on should serve to motivate discussion.

As the second part of this activity students should be asked to measure various rooms in their own homes and then record the results. These measurements and the various relationship derived should then be discussed by the class.

1.3.2 The teacher should preface the activities which follow with a brief explanation of the procedures to be followed. It should be made clear to the students that the activities are designed to acquaint them with some of the math skills used in the construction industry and also to give them a basic idea of the steps necessary to plan an compute the cost of a house.

1.3.3 The teacher should begin this activity by going over one or two simple floor plans clipped from newspapers or magazines with the students. Such things as the use of scale, space relationships and general layout should be discussed thoroughly with the students.

The teacher should next hand out Student Sheets #4 and #5 and review them with the students. This gives the students a basic idea of the steps they should use to plan their house and the symbols they will be using in the floor plan.

Although seventh grade students should have been exposed to metric measurement and the concept of scale by this time, in some cases it might be necessary to review these concepts with the class before beginning the floor plan. A meter stick should be available to the students throughout the activity and one ruler graduated in centimeters will also be required by each student for the entire time.

1.3.4 Students construct a floor plan and compute the estimated cost of their "dream house" following the procedures given on Student Sheet #4, and using the symbols given on Student Sheet #5. The teacher should circulate among the students during this period and give individual assistance where necessary. Students should be instructed to save all of their work as it will be of assistance in later activities.

NOTE: If possible, the teacher might wish to have various sample floor plans, clipped from newspapers or magazines, and/or complete floor plan books available for the students to use as models during this time.

1.3.5 After the floor plan has been completed and the approximate cost computed, the students should be asked to do an artist's conception of the house they have designed. This artist conception should include at least a front view of the house. Students should be asked to use the same scale (1/100) in constructing these artist's conceptions that they used in the floor plan. Teacher should circulate and offer assistance where necessary.

1.3.6 After the plans and artist's conceptions have been completed, all student work should be displayed and time provided for the students to examine each other's work.

EVALUATION:

1.3.1.1 The teacher will use Evaluation Sheet #3 to evaluate the student work. Since each student's product will differ from the others, evaluation will be subjective within each category of the evaluation sheet. The teacher should determine whether or not the student performed the necessary procedures within each category satisfactorily, with reference to his product only, subjectively, and then mark the correct space on the Evaluation Sheet. If the student product was judged to be satisfactory in at least 80% of the given categories, the student can be considered to have accomplished the objective.

ENRICHMENT ACTIVITIES:

A. Invite an architect to speak to the class on planning and construction of homes.

B. Show a film or filmstrip on house plans and/or the metric system.

C. Do a bulletin board consisting of floor plans and blueprints secured from newspapers, magazines, architects or draftsmen.

D. Invite a contractor or draftsman to speak to the class on building design.

E. After students have finished their plans, have them build three dimensional models, to scale, from the plans.

F. Have the students write a narrative description of their house.

G. Have the students do independent research on houses in other countries.

PERFORMANCE OBJECTIVE:

1.4 The student will be able to supply correct answers to 70% of the "Construction Math Problems" to be developed in the following activities, as verified by student performance on a test consisting of thirty-five selected problems.

ACTIVITIES:

1.4.1 After all students have finished their house plans and the related evaluation, instruct each student to compose a list of five

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math problems they had to work <u>while</u> designing the house. Each student
should also be asked to write ten problems that they would need to
do if they were actually going to do their own house construction.
Examples that may be used to motivate this process are included here;
but the teacher should be encouraged to use as many examples as
possible that actually arouse out of the work done in earlier activities.
Students should be told that problems may be either word/study problems,
number sentences or standard computation. The teacher may also wish
to go over Student Sheet #6 to motivate and clarify the process for the
students.

EXAMPLES:

1. In order to build a house, 1,000 meters of 5 cm. x
    10 cm. lumber are required. Each meter of this lumber
    cost 36¢. What will the total cost for this 5 cm. x
    10 cm. lumber for the house be?

$$
\begin{array}{r}
1,000 \text{ meters} \\
\times\ .36 \\
\hline
6,000 \\
30,000 \\
\hline
\$360.00
\end{array}
$$

2. The length of a room is twelve meters and the width of
    the room is nine meters. What is the area of the room?

$$12m \times 9\ m. = n \text{ meters} \qquad n = 108$$

1.4.2 Students should proceed to compose their problems as soon as
it is felt by the instructor that the activity requirements are clear
to them. Once again, this list should contain <u>no fewer</u> than five math
problems that grew out of the house plan and <u>no fewer</u> than ten that
are related to the hypothetical construction of the house. Students
should however, be allowed to do more than fifteen problems if they
wish. Instructor should circulate and offer individual assistance to
students who are having problems.

1.4.3 After all students have had sufficient time to compose their
construction math problems, a class activity should be conducted in
which each student is asked to volunteer at least one problem for
class solution. These problems can either be worked by the teacher
on the board, by one or more students on the board, or preferably
each student will first work a given problem at his desk and then
the teacher will select volunteers to work the problems on the board
for the class. Teacher must be careful to continu· this activity until
it appears that most students understand the process.

1.4.4 After this initial set of problems has been done, the teacher should allow the students some time to revise or add to the problems they already have. It is felt that the sharing of problems in Activity 1.4.3 will lead to clarification of some concepts that make this revision time advisable. Students should also be asked to check each of their problems carefully. (Optional) Teacher should concentrate on helping those students displaying the most difficulty during this time.

1.4.5 Students are divided into three or more teams. After the teams are selected, the teams are labeled A, B, C, and so on. Group A then selects one of the problems designed by one of the members of Team A and reads it to the class. The other two (or more) teams then try to solve this problem as quickly as possible. The first team to solve the problem receives one point. If none of the other teams can successfully solve the given problem within three minutes, Team A should be awarded two points (as long as the teacher judges the problem to be capable of solution and Team A does have the correct solution.) If one of the other teams (B, C, etc.) proposes a solution that is incorrect, they are docked one point and the problem is then thrown up for grabs.

This procedure is then repeated with the other teams supplying the problems. Each team should be given three or more opportunitites to present problems and the team with the most total points should be declared the winner. At the conclusion of this activity, the students should hand in all of their problems for teacher evaluation.

EVALUATION:

1.4.1.1 Using the problems designed by the students in the previous activities as a pool to draw from, the teacher should select thirty-five of the students' problems and prepare them in test format. This test should then be administered to the students to determine whether or not the objective has been reached. Those students who successfully answer twenty-eight or more of the problems can be considered to have accomplished the objective. The teacher should screen all problems to make sure that they are capable of solution and of a reasonable level of difficulty for the particular groups of students involved.

ENRICHMENT ACTIVITIES:

A. Students might be asked to compute the floor space of the classroom, the school, or their home and then compute the approximate cost.

B. Students might procure copies of building materials catalogs, and by using these catalogs compute the actual cost of materials for their home design.

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STUDENT SHEET #1

The following are just a few of the skills necessary in various facets of the construction industry. Categories are flexible and may over-lap and change from occupation to occupation.

MATH RELATED SKILLS

1. <u>MEASUREMENT</u>

   a. Ability to measure the length of various materials exact-ly (lumber, pipe, wire, etc.)

   b. Ability to measure various liquid volumes accurately (water (in various mixtures), paint, holding capacity of pools, basins, etc.)

   c. Area measurement

   d. Volume measurement

   e. Dry measurement

2. <u>COMPUTATION</u>

   a. Ability to add, subtract, multiply, and divide in conjuct-ion with various materials, money, time, and so on.

   b. Ability to compute with fractions.

   c. Ability to compute fractions.

   d. Ability to compute lengths and utilize scale.

   e. Ability to compute area.

   f. Ability to compute volume.

   g. Ability to compute cost and profits.

   and so on....

OTHER SCHOOL RELATED SKILLS

1. Ability to read and follow directions.

2. Ability to read plans, diagrams, and schematics.

3. Ability to read and follow formulas and recipes.

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4. Ability to write: fill out job applications, write directions, label plans and schematics.

5. Ability to spell.

6. Ability to read signs.

OTHER GENERAL SKILLS

1. Ability to werk with tools.

2. Ability to work with others.

3. Ability to speak clearly.

4. Ability to lift and carry heavy objects.

5. Ability to work in adverse weather conditions.

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1. Job Name:_____

2. Job Location (Where the job usually take place):_____

_____

3. Working Conditions:_____

_____

_____

4. Training/Education Necessary:_____

_____

_____

5. Major Tools Used:_____

_____

_____

6. Salary Range:_____

7. Math Skills Used Regularly:

    a._____

    b._____

    c._____

8. Other School Related Skills Used:

    a._____

    b._____

    c._____

    d._____

    e._____

9. Reasons Why You Would Or Would Not Like This Job:_____

_____

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PRINT OR TYPE

NAME _____   MALE _____
       (last)   (first)   (middle)   FEMALE _____

GENERAL INFORMATION

PRESENT ADDRESS _____
                 (street)   (city)   (state)   (how long?)

PHONE NUMBER _____

PREVIOUS ADDRESS _____
                  (street)   (city)   (state) (how long?)

SOC. SEC. NO. _____ DATE OF BIRTH _____ U.S. CITIZEN? ___

NO. OF DEPENDENTS ___ MARRIED ___ SINGLE ___ DIVORCED ___ WIDOWED ___

HOUSING: OWN ___ RENT ___ LIVE WITH PARENTS ___

PHYSICAL INFORMATION

HAVE YOU?

___ been absent from work because of sickness or unjury during
    the past three months?
___ ever been seriously ill? Specify: _____
___ any impairment in your physical condition or health?
___ Ear Trouble? ___ Rupture? ___ Major Surgery? ___ Diabetes?
___ Epilepsy? ___ High Blood Pressure? ___ Bronchitis? ___ Arthritis?
___ Varicose Veins? ___ Dizzy Spells? ___ Skin Disease?
___ Nervous Disorder? ___ Defective Sight? ___ Defective Hearing?
___ Asthma? ___ Back Injury? ___ Other?

If you checked any of the above please explain: _____

EDUCATION INFORMATION

EDUCATION	NAME AND LOCATION OF SCHOOL	YEARS ATTENDED	DATE GRAD.	SUBJECTS STUDIED
High School				
College				
Trade, Bus. or Corres. School				
Apprentis- ship Train.				

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POSITION APPLYING FOR

POSITION_____DATE YOU CAN START_____

SALARY DESIRED_____ARE YOU EMPLOYED NOW?_____

If so may we inquire of your present employer? No___ Yes___

MILITARY SERVICE

VETERAN OF U.S. SERVICE? Yes___No___ ·BRANCH OF SERVICE?_____

TYPE OF DISCHARGE_____TYPE OF WORK IN SERVICE_____

GRADE OR RANK IN SERVICE_____LENGTH OF SERVICE_____

CRIMINAL RECORD

Have you ever been arrested or involved in a criminal charge? (except a minor traffic violation)? Yes___No___ if yes explain:_____

_____

_____

REFERENCES

List at least three references not related to you:

1._____   _____
   (name)   (position)

_____
(street)   (city)   (state)   (phone)

2._____   _____
   (name)   (position)

_____
(street)   (city)   (state)   (phone)

3._____   _____
   (name)   (position)

_____
(street)   (city)   (state)   (phone)

UNION AFFILIATION

Do you belong to a Union Yes___No___ if yes:
NAME_____LOCAL NO._____

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A. Present or last employer_____ _____

Reason for leaving_____

Address_____Business_____

Started, Date_____Left, Date_____

Name your job, describe what you did, tell what machines,
materials and equipment you used:_____

_____

_____

B. List any other previous employers:

   1. Name_____from_____till_____

      Reason for leaving_____Pay_____

      Describe the work you did:_____

      _____

      Name_____from_____till_____

      Reason for leaving_____Pay_____

      Describe the work you did:_____

      _____

If required by the position:
    Do you have your own tools?_____
    Do you have a drivers license?_____type?_____
    Do you have an occupational license?_____

I hereby certify that the answers given by me to the foregoing
questions are true and correct.

Date_____Signature_____ _____

1. Remember all measurements for your house must be given in meters, square meters, or some smaller metric unit.   (a meter is approximately one yard.)

2. You will use a scale of one cm. = one m. for your floor plan. This is a scale of 1 to 100.   (1/100)

3. Use the symbols given on Student Sheet #5 when drawing your floor plan.

4. Your floor plan should show the following things:

    a. All walls, both interior and exterior   .
    b. All windows and doors
    c. All closets
    d. All plumbing fixtures
    e. All cabinets (built in)
    f. All landscaping to be used on the grounds
    g. All measurements must be shown and the area of each room computed and labeled. The area of the whole house should also be computed.

5. After you have finished your floor plan, find the total number of square meters in each room, including closet space and cabinets, etc. Label each room (area - length x width)

6. Find the total number of square meters in the whole house:

    a. Add the number of square meters in each room.
    b. Also compute total square meters by multiplying the length of the house by its width.
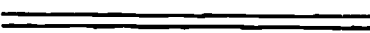
    NOTE: The product A should equal the product B.

7. Compute the approximate cost of your house by multiplying the number of square meters of floorspace in your house by $80.00. This will only give you an approximate figure.

BE SURE TO SHOW ALL OF THE THINGS LISTED ABOVE ON YOUR FLOOR PLAN!
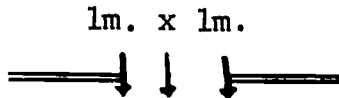
Student Sheet #5 - Symbols For Floorplan

Scale: 1 cm. = 1 meter

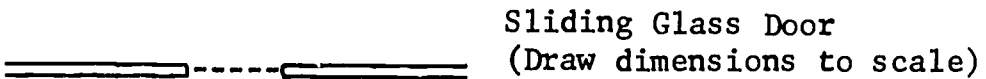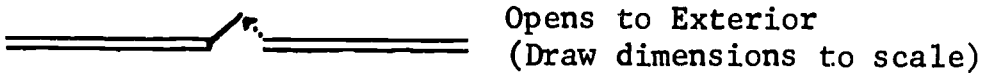   1 sq. cm. = 1 sq. meter

Walls: Exterior = _____

         Interior = _____

Windows:

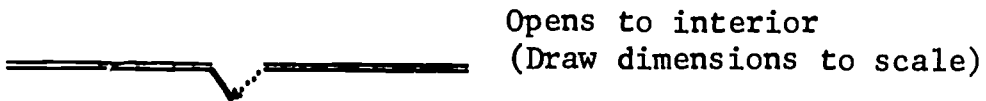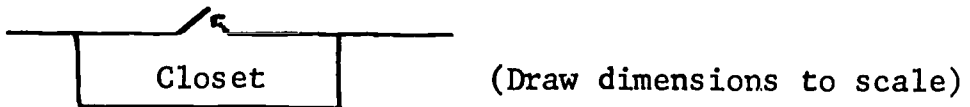   1m. x 1m.   Give window dimensions on exterior
                                side of wall.   (Draw dimensions to
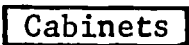   scale)

Doors:

                                Opens to interior
                                (Draw dimensions to scale)

                                Opens to Exterior
                                (Draw dimensions to scale)

                                Sliding Glass Door
                                (Draw dimensions to scale)

Closets:

                 Closet   (Draw dimensions to scale)

Plumbing Fixtures: Sink: $\boxed{S}$

                     Tub: $\boxed{\text{Tub}}$

                  Toilet: $\boxed{T}$

Cabinets: $\boxed{\text{Cabinets}}$ (Draw dimensions to scale)

Landscaping: Tree: Label type

              Shrub or Hedge:

              Flowers:

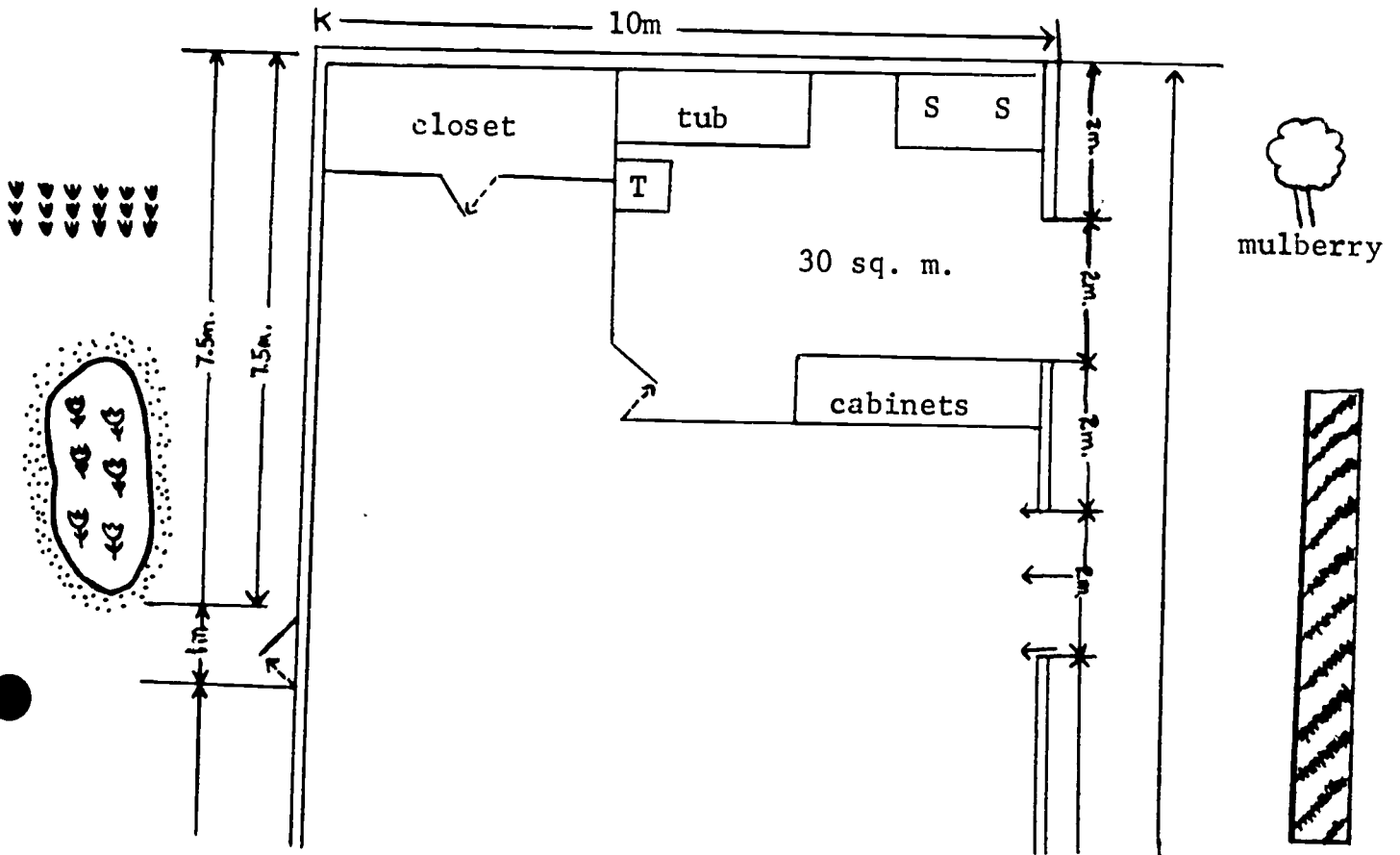   Grass:

              Gravel: 25   023

Show measurements: K————————7m.————————→

Sample:

30 sq. m.

closet

tub

T

S S

cabinets

7.5m.

7.5m.

2m.

2m.

2m.

2m.

2m.

10m

mulberry

024

1. In order to build a house, 1000 meters of 5cm x 10cm lumber are required. Each meter of this lumber costs 36¢. What will the total cost for this 5cm x 10cm lumber for the house be?

2. The length of a room is twelve meters and the width of the room is nine meters. What is the area of this room.

3. 6,000 cubic meters of cement are required to build a large house. If each cubic meter of cement costs 30¢ what will the total cost for cement be?

4. A house is 100 meters long and 20 meters wide. What is the total area of the house?

5. If the above house costs $80.00 per square meter to construct, what is the total cost of the house.

6. A carpenter is paid $6.00 per hour. He works on your house for a total of 80 hours. How much do you owe him for his work?

7. If you subtract the carpenter's wages in question number 6 from the total cost of the house you found in problem number 5, what is the remaining cost of the house?

8. An electrician uses 3,000 meters of wire in a house at an average cost of 10¢ per meter. What is the total cost for wire? If he is given a 10% discount on the wire, what will the cost be?

025

EVALUATION SHEET #1

DIRECTIONS: List at least two different occupations in the construction
industry. Under each occupation list at least two math skills required
in the occupation and 3 other general skills. You may list more if
you wish.

OCCUPATION #1:_____

MATH SKILLS:

      1._____

      2._____

      3._____

GENERAL SKILLS:

      1._____

      2._____

      3._____

      4._____

      5._____

OCCUPATION #2:_____

MATH SKILLS:

      1._____

      2._____

      3._____

GENERAL SKILLS:

      1._____ _____

      2._____

      3._____

      4._____

      5._____

Objective attained_____
Objective not attained_____   Number missed_____

EVALUATION SHEET #2

INSTRUCTIONS:

1. Choose a want ad.

2. Write a brief letter to the advertiser inquiring about the job,
   and giving your qualifications and "personal selling points".
   You many assume that you have whatever training or education is
   necessary for the job. Write on a separate sheet of paper.
   Make sure you give at least five personal selling points.

3. After you have completed your letter, return to this sheet and
   list all the personal selling points in your letter on the
   spaces provided.

PERSONAL SELLING POINTS

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

027

EVALUATION SHEET #3

STUDENT NAME_____

CATEGORY #	DESCRIPTION	SATIS.	UNSATIS.
1	The student gave all measurements in meters or fractions of meters.		
2	The student used the scale of 1 cm. = 1m.		
3	The student used the symbols given.		
4	The student incorporated all necessary facilities (bathrooms, kitchen, etc.) in his plan.		
5	The student labled all necessary measurements.		
6	The student computed room area.		
7	The student computed total area.		
8	The student computed the approximate cost of the house correctly.		
9	Students completed at least one view of the house.		
10	The student completed the steps of planing.		

Objective Accomplished   YES_____NO_____

MEDIA AND RESOURCE LIST

1. WIDENING OCCUPATIONAL ROLES KIT (WORK) - Multimedia Kit - SRA.

2. MATH APPLICATIONS KIT - Multimedia Kit - SRA.

3. FOUNDATIONS FOR OCCUPATIONAL PLANNING - Filmstrips/cassettes - SVE.

4. WOODWORKERS TOOLS - Filmstrips - Marstons.

5. HOW WE GET OUR HOMES - Filmstrips - SVE.

6. CAREER INFORMATION KIT - Multimedia Kit - SRA.

7. JOB OPPORTUNITIES NOW - Filmstrips/cassettes - SVE.

8. JOB EXPERIENCE KIT - Multimedia Kit - SRA.

9. OCCUPATIONAL EXPLORATION KIT - Multimedia Kit - SRA.

10. CHOOSING A CAREER - Filmstrips/cassettes - SVE.

11. THE MONEY TREE - Filmstrips/cassettes - Bowman.

12. BUILDING TRADE WORKERS - Filmstrips/cassettes - Eyegate.

13. THE CAREER GAME - Game Kit - EDC.

14. CAREERS: CONSTRUCTION - 16mm film - Doubleday Multimedia.

15. HOMES WE LIVE IN - Filmstrips/cassettes - SVE.

16. KEYS-CAREER EXPLORATION PROGRAM - Filmstrips/cassettes - SRA.

17. THE NATIONS BUILDERS - Filmstrips/cassettes - Bowman.

18. CAREERS: MAKING A CHOICE - 16 mm film - Doubleday Multimedia.

19. MAKING IT IN THE WORLD OF WORK - 16 mm film - Filmfair.

20. YOUR JOB: APPLYING FOR IT - 16 mm film - Coronet.

21. YOUR JOB: FINDING THE RIGHT ONE - 16 mm film - Coronet.

22. YOUR JOB: FITTING IN - 16 mm film - Coronet.

23. ECONOMICS: WORKERS WHO BUILD HOUSES - 16 mm film - BFA.

24. BUILDING TRADES: CONSTRUCTION - Filmstrips/cassettes - Zonar.