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ABSTRACT

Despite an evaluation study that showed no differences in student achievement between students in traditionally scheduled schools and in year round schools (YRSs), school personnel continued to provide anecdotal evidence of educational benefits in YRSs. In this oral testimony, the continuity of the learning process was stressed. Because the student is on vacation for only 15 days, he fails to build up nonschool behaviors that teachers find so disruptive among students who have lived outside the school for three months. This more refined examination of learning opportunity and student achievement included surveys of students and teachers and a comparison of student performance on locally made tests designed to measure the achievement of sixth-grade mathematics students as measured against district goals. Interviews with teachers provided evidence that less post-vacation time was spent reviewing pre-vacation material in the YRSs. Student attitudes about going back to school, disruptions, and retention were better for students at YRSs than for the control group. There was, however, no significant difference in the achievement between the two groups. Appendixes include the teacher interview schedule, the student questionnaire, and the test given the students. (Author/IRT)

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EVALUATION OF YEAR-ROUND SCHOOLS
CHERRY CREEK DISTRICT 5
SECOND YEAR FINAL REPORT

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EVALUATION RESEARCH SERVICES
1976

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EVALUATION OF YEAR-ROUND SCHOOLS
CHERRY CREEK DISTRICT 5
SECOND YEAR FINAL REPORT

BACKGROUND

Cherry Creek School District 5 has completed four years of experience operating schools on a 45-15 year-round schedule (YRS). Three elementary schools (Cunningham, Eastridge, and Mission Viejo) have used YRS for 4, 3, and 2 years, respectively. This year Laredo Middle School initiated YRS for part of its pupils. Partially supported by Title III funds from the Colorado Department of Education, the district initiated evaluation projects to study the merits of YRS. During the spring of 1975 the authors of this report conducted an evaluation based on the characteristics of programs in YRS schools, the reactions of parents to YRS, the costs of YRS, and the effects of YRS on student achievement. The findings of that earlier study are summarized as follows.

Program Description:

1. The YRS concept requires flexible, individualized instructional programs to function properly. These conditions exist in the current YRS schools in District 5.
2. YRS makes special demands on teachers and parents, which those persons now involved with the program seem willing to meet.
3. Minor problems with YRS still must be resolved.

Survey of Parent Reactions:

1. Roughly one-third of the parents experienced conflicts between the YRS calendar and the children's summer sports activities.
2. More than one-third reported that the YRS calendar caused inconvenience with respect to family vacation plans; but more than one half regarded YRS as more convenient than the traditional calendar for arranging family vacations.

3. Over 40 percent of parents anticipate future schedule inconveniences when their younger children are in YRS and older brothers and sisters are in junior-high or high-schools run on a traditional calendar.
4. Over one-third of the parents reported that their children maintain more momentum for learning and forget less during vacation under the YRS schedule.
5. Roughly two-thirds of the parents prefer the YRS to the traditional schedule.

Costs:

1. YRS and traditional schools have essentially equal operating costs.
2. YRS is fundamentally a means of accommodating enrollment growth and thus must compete in any evaluation with such concepts as double sessions, constructing new buildings, enrollment redistribution, etc.
3. Converting traditional schools to YRS is cheaper than building new schools or adding to existing buildings. However, YRS is more expensive than double sessions and enrollment redistribution.
4. Elementary school enrollment in District 5 can be expected to grow by approximately 6,500 pupils in the next 10 years. Various plans for accommodating this growth, using combinations of building new schools, redistributing enrollment, and converting traditional schools to YRS, have costs ranging from \$7 million to \$16 million.

Academic Achievement:

When pupils in YRS were matched on IQ and sex with pupils in traditional schools and achievement test scores were compared, no important differences were observed. Test scores on the Iowa Test of Basic Skills (ITBS) given during the district's standardized testing program reveal no differences between students in YRS and traditional schools in grades 3-6. No support was found for the contention that pupils' achievement is enhanced by YRS.*

* A similar analysis was conducted by the district Office of Program Evaluation on test scores for 1976. The results were the same.

Despite our findings that there are no differences in student achievement due to YRS, school personnel continue to provide anecdotal evidence of educational benefits due to this scheduling arrangement. In this oral testimony, the continuity of the learning process is stressed. Because the student is on vacation for only 15 days, he fails to build up those non-school behaviors which teachers find so disruptive among students who have lived outside a structural environment for three months. The YRS student has had less time to forget the material learned before the last vacation. Therefore, he needs less time to review when he returns. He settles down sooner than his traditional school counterpart. By short-circuiting the post-vacation review he and his teacher can move rapidly to new material. They can move further in the prescribed curriculum or have time for "enrichment activities," those that make the school experience more personal and interesting. They are less bored by long vacations or a school year that seems to last forever. Of course this explanation covers only the main part of the educational benefits ascribed by supporters to YRS.

Our present study was designed to refine the analysis and resolve the apparent differences between the oral testimony and the test results. We chose to study learning opportunity (Are there differences between YRS and traditional schools in post-vacation review and disruption?), and student achievement. A more fine-grained analysis of achievement can be made by using tests constructed to measure district objectives. Any incongruence between local objectives and the content of published standardized achievement tests may produce results insensitive to local program differences. If this is the case, the analysis of the ITBS results may not have produced a sensitive comparison between YRS and traditional schools.

METHODS

The assessment of learning opportunities was conducted in two ways. First, the teachers at the three YRS schools were interviewed by telephone. Second, the sixth grade students were surveyed for their reactions to the new school year. The interviews were conducted over the second and third weeks of the new school year. For YRS schools, the academic year begins in July. All students are on vacation for a two-week period after which first graders become second graders, second graders become third graders, etc.* Three elementary schools on traditional schedules were selected as comparison schools. Teachers from these schools were telephoned and interviewed during the second and third weeks of their new school year in September.

The teachers were asked whether their recent lessons in reading, math, and language arts had been new or reviewed material and how many days it took to review pre-vacational material in these subjects. The teachers were asked to estimate the loss of learning that typically takes place during vacations. They were asked about the length and severity of the post-vacation disruptiveness and first week trauma.

Because learning opportunity is partially determined by the competence and well-being of the teachers, the interviews also consisted of questions related to their energy and enthusiasm, staff morale, their participation in college credit courses, inservice and long-term planning. They were also asked the number of years of teaching experience and the number of students for whom they had responsibility. Teachers in the three YRS schools were asked to list the advantages and disadvantages of

* Track B students return in August after a slightly longer vacation.

YRS. Fifty-eight YRS teachers and 48 traditional school teachers were contacted and interviewed. Nine teachers from YRS schools and seven from traditional schools were not accessible for interviews. Two teachers from YRS schools were contacted but refused to participate. The interviewers were employed by ERS and used an especially prepared interview schedule. That schedule is available in Appendix A.

The sixth grade students were surveyed to provide a second assessment of post-vacation disruption as well as the students' feelings about returning to school for another academic year. A twenty-seven item attitude assessment instrument was constructed by the authors. The first subscale contained items such as "I'm glad to be back to school after vacation," "I'm tired of school already and would like a vacation," and "When we come back from vacation we spend too much time getting settled down to school work." The second subscale measured general attitudes toward school with items such as "I like school because there are so many fun things to do," and "I like school because we learn something every day." The instrument can be examined in Appendix B.

The assessment of student achievement involved the development of an objective-referenced math test for sixth graders (see Appendix C). The decision to measure math achievement in the upper elementary grades was based on the conviction that math is the topic most susceptible to learning loss over the summer months. This conviction is substantiated by the publishers of the Stanford Achievement Test. They noted a decline in math scores (but no decline in reading scores) from May to September.* The sixth graders were selected because of the larger variance always associated with the scores of older children.

* Manual of Stanford Achievement Test (1973 Edition).

The test was constructed by the authors based on a study of the district curriculum guide for elementary mathematics and the text book series used in the intermediate grades. An initial draft of the instrument was submitted to several teachers of elementary mathematics for their review. Modifications were made based on this review.

The math test was given to all the sixth graders in the three YRS schools and the three comparison schools during the second week of their respective school years. Test data were scored, coded and analyzed using a computer scoring program and the Statistical Program for the Social Sciences (SPSS). Test scores from the three YRS schools and the comparison schools were evaluated with an analysis of covariance. The covariate used was the individual student's quantitative ability score on the Cognitive Ability Test, part of the Iowa Test of Basic Skills.

RESULTS

LEARNING OPPORTUNITY

The interviews with teachers provided evidence that less post-vacation time in the YRS schools is spent reviewing pre-vacation material. YRS teachers were more likely than traditional school teachers to report that their most recent lessons in reading and math were new, not reviewed material. The most recent language arts lesson was just as likely to be new in traditional schools as YRS schools. The number of days spent in reviewing old material was considerably less for YRS teachers compared to traditional school teachers. Table 1 contains the percentage of respondents indicating the most recent lesson was new. Table 2 contains the average number of days spent in review of the three subjects.

TABLE 1
 PERCENTAGE INDICATING MOST
 RECENT LESSON WAS NEW MATERIAL

	<u>YRS</u>	<u>TRADITIONAL</u>
Reading	86 %	69 %
Math	41 %	33 %
Language Arts	69 %	71 %

TABLE 2
 AVERAGE NUMBER OF DAYS
 SPENT IN REVIEW

	<u>YRS</u>	<u>TRADITIONAL</u>
Reading	3.0	12.7
Math	3.9	13.3
Language Arts	3.3	9.7

The YRS teachers rated the loss of learning that occurs over vacation as less severe than did the traditional school teachers (see Table 3).

TABLE 3
 RATED SEVERITY OF LOSS OF LEARNING

	<u>YRS</u>	<u>TRADITIONAL</u>
Severe	0 %	2 %
Moderate	7 %	23 %
Minor	86 %	42 %
Almost non-existent	7 %	33 %

The "first week trauma," is thought to be due to negative non-school behaviors which are built up over vacations. This kind of disruption was rated as less severe by YRS teachers as compared with teachers on traditional schedules. The average number of days needed for the students to settle down to work was 1.5 days for the YRS schools and 5.4 days for the traditional schools. Table 4 contains the ratings of the severity of negative non-school behaviors.

TABLE 4
RATED SEVERITY OF NON-SCHOOL BEHAVIORS

	<u>YRS</u>	<u>TRADITIONAL</u>
Severe	0 %	6 %
Moderate	16 %	33 %
Minor	22 %	25 %
Almost non-existent	62 %	25 %

The student attitude inventory, administered to the new sixth graders confirmed the teachers' assessments. The first subtest measured the students' attitudes about getting back to school, disruption, and retention. On this subtest the YRS sixth graders scored significantly higher than did the comparison group on traditional schedules. Table 5 contains the results of an analysis of variance comparing the scores of subtest one between YRS and traditional sixth graders.

TABLE 5
ANOVA ON SUBTEST ONE OF THE
STUDENT ATTITUDE INVENTORY

SOURCE OF VARIANCE	MEAN SQUARE	DEGREES OF FREEDOM	F
Between Groups	263.88	1	4.12*
Within Groups	64.06	473	

Mean for YRS group = 25.01
Mean for traditional group = 24.5

* $p < .05$

Teachers on YRS reported almost three more years of experience than the traditional teachers. The two groups were responsible for about the same numbers of students. They took approximately the same number of college credit courses over the last twelve months. However, teachers on the traditional schedule had more inservice courses and spent much more time in long-range curriculum planning and professional association activities than did the YRS teachers. YRS teachers rated their morale and their enthusiasm for the new year lower than did the traditional teachers. YRS teachers reported more fatigue than did traditional teachers.

STUDENT ACHIEVEMENT

An analysis of covariance was used to compare the scores on the math test of the sixth graders in YRS and traditional schools. Quantitative ability scores and ITBS math grade equivalent scores from the most recent district testing were used as covariates. By this procedure it was possible to compare the post-vacation math achievement of the two groups,

as if the two groups had the same initial standing on these pre-treatment variables. The results of this analysis, displayed in Table 6, show that the average of the YRS group (adjusted for the effect of the covariates) was greater than the adjusted average of the traditional group. However, this difference was not significant at the usual levels.* (The F-ratio is barely significant at the .15 level of statistical significance).

TABLE 6
ANALYSIS OF COVARIANCE ON MATH ACHIEVEMENT

SOURCE OF VARIANCE	MEAN SQUARE	DEGREES OF FREEDOM	F
Between Groups	75.77	1	1.86
Quantitative Ability	204.57	1	
Prior Math Achievement	5672.74	1	
Residual	40.82	466	

	<u>YRS</u>	<u>TRADITIONAL</u>
Adjusted Means (Math Achievement)	35.87	35.05
Unadjusted Means (Math Achievement)	35.10	35.74
Means for the Covariates:		
Quantitative Ability	101.91	105.39
Prior Math Achievement (ITBS)	5.44	5.70

* Unadjusted means favored the traditional group. However, quantitative ability and previous achievement were significantly higher in the traditional group. The effect of the analysis of covariance was to reverse the direction of mean differences. The correct interpretation is that, if the groups started at the same point in ability then the YRS would have been superior on the criterion variable (i.e., on the objective-referenced math achievement test).

The adjusted means on the math achievement test show only about a one-point superiority for the YRS (35.87 vs. 35.05). The standard deviation of the math achievement test was about eight points, with a range of about 40 points from a lowest score of about ten to a highest score of around 50. Hence, the mean difference between the YRS and traditional schools was quite small, and the two distributions of math achievement scores were barely distinguishable.

The second subtest of the attitude instrument measured general attitude toward school with items such as "I like school because we learn something every day." An analysis of variance was used to compare the scores of YRS and traditional sixth graders. The results showed no differences between the two groups (Table 7).

TABLE 7
ANOVA ON ATTITUDES TOWARD SCHOOL

SOURCE OF VARIANCE	MEAN SQUARE	DEGREES OF FREEDOM	F
Between Groups	30.9	1	.71
Within Groups	43.7	473	

Mean for YRS group = 25.0

Mean for traditional group = 24.5

TEACHER ATTITUDE

The YRS teachers were asked during their interviews to list the advantages and disadvantages associated with YRS. The advantage named most often was "less time spent in review and less loss of learning

over vacations." The disadvantage named most often was the "extra work, extra time needed for planning, record-keeping, and organization. The advantages and disadvantages named by the YRS teachers can be reviewed in Appendix D.

CONCLUSIONS

The most persuasive argument for the Year-Round Schedule continues to be the savings of school construction costs for a growing school district. The purported educational advantages remain elusive. Students on YRS demonstrate no superiority over students on nine-month schedules on standardized achievement tests. There is slight, but not unequivocal advantage for YRS students on the measure which is most likely to demonstrate superiority. This test is one based on the district math curriculum, administered to sixth grade students immediately after their vacations.

General attitude toward school was no different in the YRS sixth graders than the others. However items more specific to attitudes of settling back into school life were more positive among YRS students than the comparison group on the traditional schedule.

Clear differences were reported by teachers in the time spent in review and in the extent of first week disruption. These differences point, arguably, to better learning opportunity in the YRS. However, the opportunity is not reflected in enhanced math achievement. Perhaps the time freed up by less need for review and less first week disruption is spent on other academic or non-academic tasks. It is clear that the YRS presents no educational detriment to its students and offers several advantages.

CHERRY CREEK YRS EVALUATION:
INTERVIEW SCHEDULE

INTRODUCTION

Identify yourself by name and association with Evaluation Research Services. Say that we have been hired by the district to evaluate the Year Round Schedule (YRS). Remind them that their principal alerted them to the prospect of a telephone interview. Tell them it should last about 15 minutes.

Assure anonymity.

QUESTIONS (Paraphrase)

1. "How many years have you taught school?"
2. "How many years have you taught on YRS?"
3. "For how many students are you primarily responsible?" (If they share responsibility on a team determine the number of teachers, aides, and students on team).
 - a. "For how many students do you have to keep grades and records (on academic progress)?"
 - b. "For how many students must you conduct parent conferences?"
 - c. "In your opinion are these numbers too large for you to do an optimum job?"
 - d. "Do these numbers reflect greater responsibilities for the YRS teacher over the teacher on a traditional schedule?" (Encourage comment).
4. "Think about the lesson in reading which you most recently taught (since school started)."
 - a. "Do you consider this unit to be new material or a review of material covered in the last school year?"
 - b. "Describe the latest lesson in math. Was this new material or a review?"
 - c. "Describe the latest lesson in language arts. Was this new or reviewed material?"

- d. "In starting the new school year: How many days does it take to review material covered in the previous year?"
- in reading
math
language arts
- e. "Would you say that the 'loss of learning' that sometimes occurs over vacation was (this year)?"
- a. Severe (i.e., we had to retrace our steps several months).
- b. Moderate (1-2 months review).
- c. Minor.
- d. Almost non-existent (we moved immediately to new material).
- f. "Is the time taken for review more or less than review needed on a traditional schedule?"
(Comment).
5. "We want to ask a few questions about the "First Week Trauma". That is the name for the negative non-school behaviors which kids build up over vacations. Some examples are disruptiveness, inability to settle down and pay attention to academic matters, restlessness, habits of non-reading and non-thinking."
- a. "How much time (in number of days) does it take to get the kids settled down to school work?"
- b. "How would you rate the severity of the children's negative non-school behavior during the first week back from vacation?"
(Pause, if they need a prompt use the following).
- a. Severe.
- b. Moderate.
- c. Minor.
- d. Almost non-existent.
6. "How much time over the past year have you spent in?"
- a. Diagnoses and placement.
- b. Parent conferences.
- c. Grading and evaluation.
- d. Meetings.
- e. Planning.

7. "During the past 12 months, tell me about your participation (brief description and time spent in each) in the following activities."
- a. College credit courses.
 - b. Inservice Education.
 - c. Long range planning.
 - d. Activities connected with your professional association or union.

Comment on the quantity and quality of opportunities in the above areas.

8. "We would like to ask about your energy level and general enthusiasm for a new school year."

Ask for a comment then find out if they are:

- 1)
 - a. Quite fatigued and not at all ready for the new year.
 - b. Moderately fatigued.
 - c. Not at all fatigued and quite ready.
- 2)
 - a. Very enthusiastic.
 - b. Moderately enthusiastic.
 - c. Not at all enthusiastic.

9. "Describe the morale of the faculty at your school."
(Let them comment and then get them to rate it as:)
- a. High
 - b. Medium
 - c. Low

10. "Comment on the efficiency with which the school is administered."
(After they have commented, get them to rate it as:)
- a. Very efficient.
 - b. Moderately efficient.
 - c. Not very efficient.

11. "Overall, what do you believe are the advantages and benefits (both to teachers and students) of YRS?"
(Get them to be specific. Get them to move beyond slogans. For example, they are likely to say "maintain momentum for learning" or "better mental health." Ask them for clarification and examples).

12. "What are the disadvantages or negative effects of YRS?"
(Get them to be specific. Get them to move beyond slogans. For example, they are likely to say "maintain momentum for learning" or "better mental health." Ask them for clarification and examples).

HOW DO YOU FEEL ABOUT SCHOOL?

A. Below there are some statements about how a sixth-grade student might feel when he or she starts a new school year. For each statement decide whether you

- a. strongly agree
- b. agree
- c. don't know
- d. disagree
- e. strongly disagree

Here is an example:

I. I like strawberry ice cream.

- a. strongly agree b. agree c. don't know d. disagree e. strongly disagree
Since Amy loves strawberry ice cream, she circles a for "strongly agree."

There are no right or wrong answers, so respond to each item as honestly as you can. Do not write your name on your paper.

1. I'm glad to be back to school after vacation.
a. strongly agree b. agree c. don't know d. disagree e. strongly disagree
2. The last vacation was too short.
a. strongly agree b. agree c. don't know d. disagree e. strongly disagree
3. I remember alot of what we learned before this last vacation.
a. strongly agree b. agree c. don't know d. disagree e. strongly disagree
4. It seems like this school year will last forever.
a. strongly agree b. agree c. don't know d. disagree e. strongly disagree
5. I'm tired of school already and would like another vacation.
a. strongly agree b. agree c. don't know d. disagree e. strongly disagree

6. The first few days back from vacation, we got right down to school work.
a. strongly agree b. agree c. don't know d. disagree e. strongly disagree
7. My teacher seemed eager to start school again.
a. strongly agree b. agree c. don't know d. disagree e. strongly disagree
8. I had a really fun vacation.
a. strongly agree b. agree c. don't know d. disagree e. strongly disagree
9. There weren't enough activities available during the last vacation.
a. strongly agree b. agree c. don't know d. disagree e. strongly disagree
10. I spent alot of time by myself during the last vacation.
a. strongly agree b. agree c. don't know d. disagree e. strongly disagree
11. My teacher seems tired.
a. strongly agree b. agree c. don't know d. disagree e. strongly disagree
12. There is too much noise and confusion in this school.
a. strongly agree b. agree c. don't know d. disagree e. strongly disagree
13. When we come back from vacation we spend too much time getting settled down to school work.
a. strongly agree b. agree c. don't know d. disagree e. strongly disagree
14. Last spring it was easy to do school work; now I can't get used to it.
a. strongly agree b. agree c. don't know d. disagree e. strongly disagree
15. The kids in my class are really noisy and rowdy.
a. strongly agree b. agree c. don't know d. disagree e. strongly disagree
16. This school has many interesting activities.
a. strongly agree b. agree c. don't know d. disagree e. strongly disagree

17. Other children bother me when I'm trying to do my school work.
a. strongly agree b. agree c. don't know d. disagree e. strongly disagree
18. My teacher listens to what I have to say.
a. strongly agree b. agree c. don't know d. disagree e. strongly disagree
19. My teacher tries to make school interesting to me.
a. strongly agree b. agree c. don't know d. disagree e. strongly disagree
20. Most school days seem like they will never end.
a. strongly agree b. agree c. don't know d. disagree e. strongly disagree
21. The grown-ups at my school are friendly.
a. strongly agree b. agree c. don't know d. disagree e. strongly disagree
22. School is a good place for making friends.
a. strongly agree b. agree c. don't know d. disagree e. strongly disagree
23. I like school because there are so many fun things to do.
a. strongly agree b. agree c. don't know d. disagree e. strongly disagree
24. I like school because we learn something everyday.
a. strongly agree b. agree c. don't know d. disagree e. strongly disagree
25. We spend too much time reviewing school lessons we learned before vacation.
a. strongly agree b. agree c. don't know d. disagree e. strongly disagree
26. My teacher is too busy to help me when I need help.
a. strongly agree b. agree c. don't know d. disagree e. strongly disagree
27. I am a pretty good reader.
a. strongly agree b. agree c. don't know d. disagree e. strongly disagree

- B. In three or four sentences, write down what you did during your last vacation (for example -- family vacation, summer camp, Bible school, little league, skateboarding, watching T.V., swimming lessons):

CHERRY CREEK MATH ASSESSMENT

This test will tell us how well sixth-grade students can do math. Try to answer all the questions. Read the entire item before answering. Circle the letter next to the right answer. If you are not sure of the correct answer, take a guess.

Your name: _____

The name of your school: _____

How many years have you attended this school? _____

1. Which is the right way to read this number: 10,008?
 - a. One-thousand-eight
 - b. Ten-thousand-eight
 - c. One-hundred thousand-and-eight
 - d. One-hundred-eight

2. Which one of the numbers below is the same as this Roman numeral: CIX?
 - a. 61
 - b. 99
 - c. 109
 - d. 111

3. For these two numbers

9,161	10,002
-------	--------

 which one of these statements is true?
 - a. $9,161 < 10,002$
 - b. $9,161 > 10,002$
 - c. $9,161 = 10,002$

4. An encyclopedia shows these population figures:

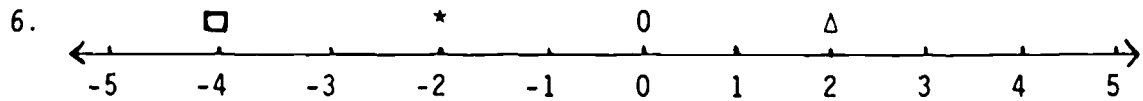
Springfield	121,406
Decatur	41,802
Minter	61,542

What is the population of the city of Minter rounded to the nearest thousand?

- | | | |
|-----------|----|-----------|
| a. 62,000 | 23 | c. 61,540 |
|-----------|----|-----------|

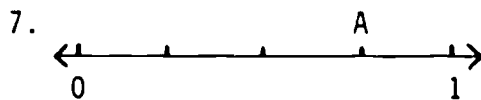
5. What is another way of writing 2^3 ?

- a. $2 \times 2 \times 2$
- b. 3×2
- c. 3×3
- d. $3 \times 3 \times 3$



Start at 2 and subtract 4. Which figure is above the number on which you stop?

- a. \square
- b. $*$
- c. 0
- d. Δ



Which fraction describes the point A?

- a. $1/2$
- b. 0
- c. $3/4$
- d. $1/4$

8. Julia started with a number, and divided it by 6, and got the correct answer. What number should she multiply her answer by to get back the number with which she started?

- a. 12
- b. 6
- c. 0
- d. It is impossible to tell.

9.
$$\begin{array}{r} 31 \\ \times 12 \\ \hline \end{array}$$

- a. 93
- b. 372
- c. 651
- d. 62

10.
$$21 \overline{) 231}$$


- a. 1
- b. 10
- c. 11
- d. 21

11. Which way is the proper way to add these three numbers?

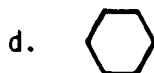
$$3 + 6 + 1$$

- a. $(3 + 6) + 1 = 9 + 1 = 10$
 b. $3 + (6 + 1) = 3 + 7 = 10$
 c. Both of the above ways are proper and will give the correct answer.
12. $1,491 \times 687$

Which one of the following is the same as the above?

- a. $687 \times 1,491$
 b. $687 + 1,491$
 c. $1,491 + 687$
 d. $1,491 \div 687$
13. Which one symbol below means the same as this symbol: 
- a. \times
 b. $+$
 c. $>$
 d. \div

14. Circle the letter beside the hexagon.



15. Circle the letter beside the fraction "one-twelfth."

- a. $1 \frac{1}{2}$
 b. $1/12$
 c. 12
 d. $11/12$

16. Which one statement is true about these two fractions: $\frac{1}{2}$ and $\frac{1}{4}$?

- a. $\frac{1}{2} > \frac{1}{4}$
 b. $\frac{1}{2} < \frac{1}{4}$
 c. $\frac{1}{2} = \frac{1}{4}$

17. Which one of the fractions below has the same value as $\frac{1}{2}$?
- $\frac{3}{6}$
 - 2
 - $\frac{1}{6}$
 - $\frac{2}{1}$
18. Hubert and Mike each bought ten-cent Hershey bars.
Hubert cut his Hershey bar in six equal pieces and ate two of them.
Mike cut his bar into three equal pieces and ate one of them.
- Hubert ate more of his bar than Mike.
 - Mike ate more of his bar than Hubert.
 - Mike and Hubert ate the same amounts of their candy bars.
19. Mother gave one-fifth of the lemonade to Teresa and one-third of the lemonade to Merv. Who got more lemonade?
- Teresa
 - Merv
 - Mother
 - Teresa and Merv got the same amount.
20. $\frac{1}{2} + \frac{1}{3} =$
- 1
 - $\frac{2}{5}$
 - $\frac{5}{6}$
 - $\frac{4}{3}$
21. $\frac{3}{4} \times \frac{1}{2} =$
- 3
 - $\frac{4}{6}$
 - $\frac{1}{2}$
 - $\frac{3}{8}$
22. Which fraction below is the same as $\frac{12}{18}$?
- $\frac{1}{4}$
 - $\frac{2}{3}$
 - $\frac{1}{6}$
 - $\frac{1}{3}$

23. Another way to write $\frac{3}{4}$ is

- a. .34
- b. .75
- c. .25
- d. .40

24. $\$ 3.44$
 $- \underline{\$ 1.53}$

- a. \$ 1.91
- b. \$ 4.97
- c. \$ 2.44
- d. \$ 2.00

25. Which one statement is true about these two numbers: .34 .61 ?

- a. $.34 > .61$
- b. $.34 < .61$
- c. $.34 = .61$

26. Mary has \$ 7.14
 Benita has \$ 7.89
 Lilly has \$ 7.65
 Iris has \$ 8.03

Who has about \$ 7.00?

- a. Mary
- b. Benita
- c. Lilly
- d. Iris

27. $.31$
 $+ \underline{.09}$

- a. 1.21
- b. .319
- c. .40
- d. .22

28. $.27 - .15 =$

- a. .2715
- b. .27
- c. .12
- d. .15

29. .60 is the same as

- a. 6
- b. $\frac{3}{10}$
- c. $\frac{0}{6}$
- d. $\frac{6}{10}$

30. .25 is the same as

- a. 25%
- b. 2%
- c. 52%
- d. 40%

31. How long is your thumb?

- a. About two feet
- b. About two inches
- c. About one yard
- d. About one meter

32. Which month comes earliest in the calendar year?

- a. February
- b. June
- c. May
- d. October

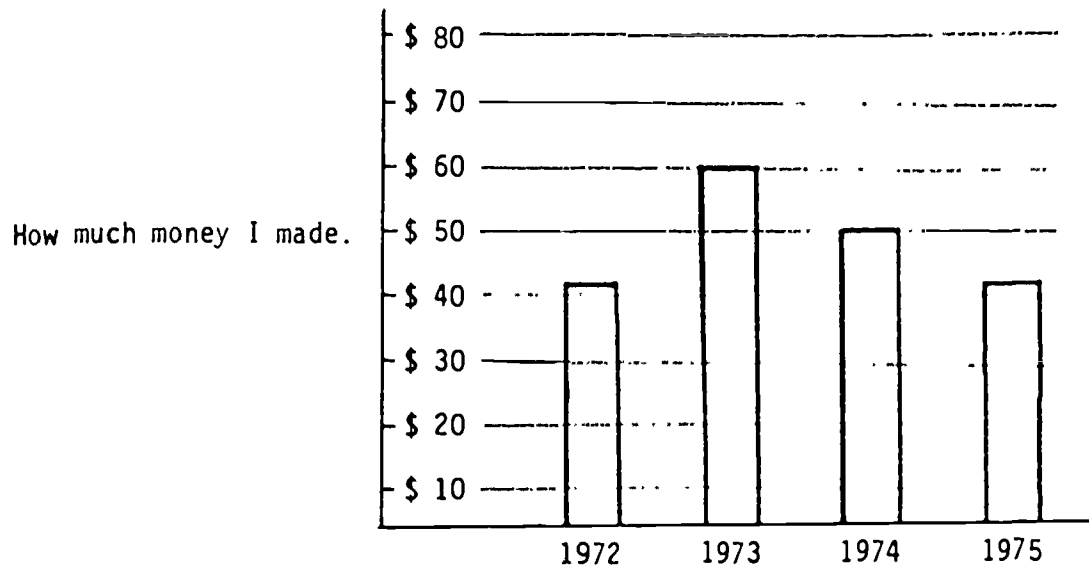
33. Michelle's birthday is June 2nd. Her father's birthday is July 8th.

June						
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	26	27
28	29	30				
July						
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18

How many weeks are there between Michelle's and her father's birthdays?

- a. 2
 - b. 3
 - c. 5
 - d. 6
34. The supermarket checker gave Randall 3 dimes, a nickel and two pennies. How much money did he receive?
- a. 22¢
 - b. A dollar
 - c. 37¢
 - d. 50¢

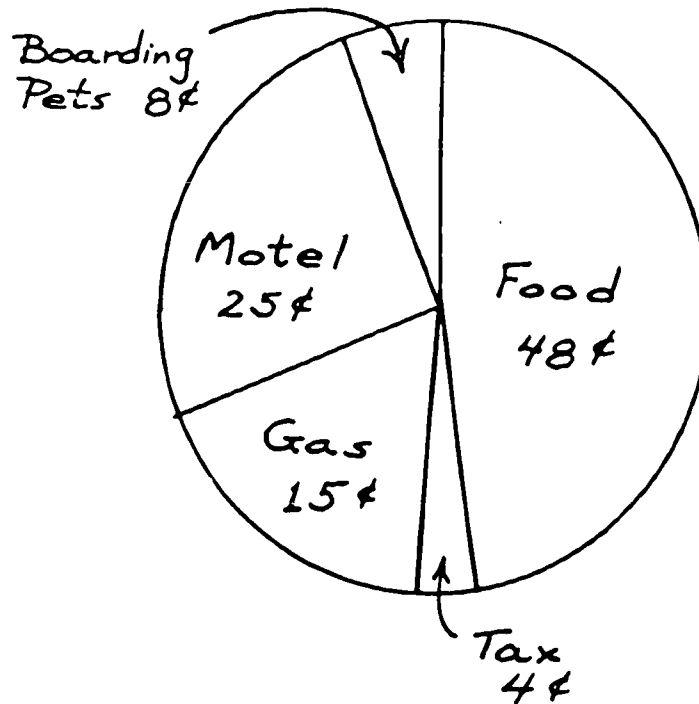
35. Mrs. Fletcher, the school cook, wished to divide a 12 inch long cake into four equal pieces. How long should each piece be?
- 48 inches
 - 1 inch
 - 4 inches
 - 3 inches



Arthur Winslow graphed his earnings on his paper route for the past four years.

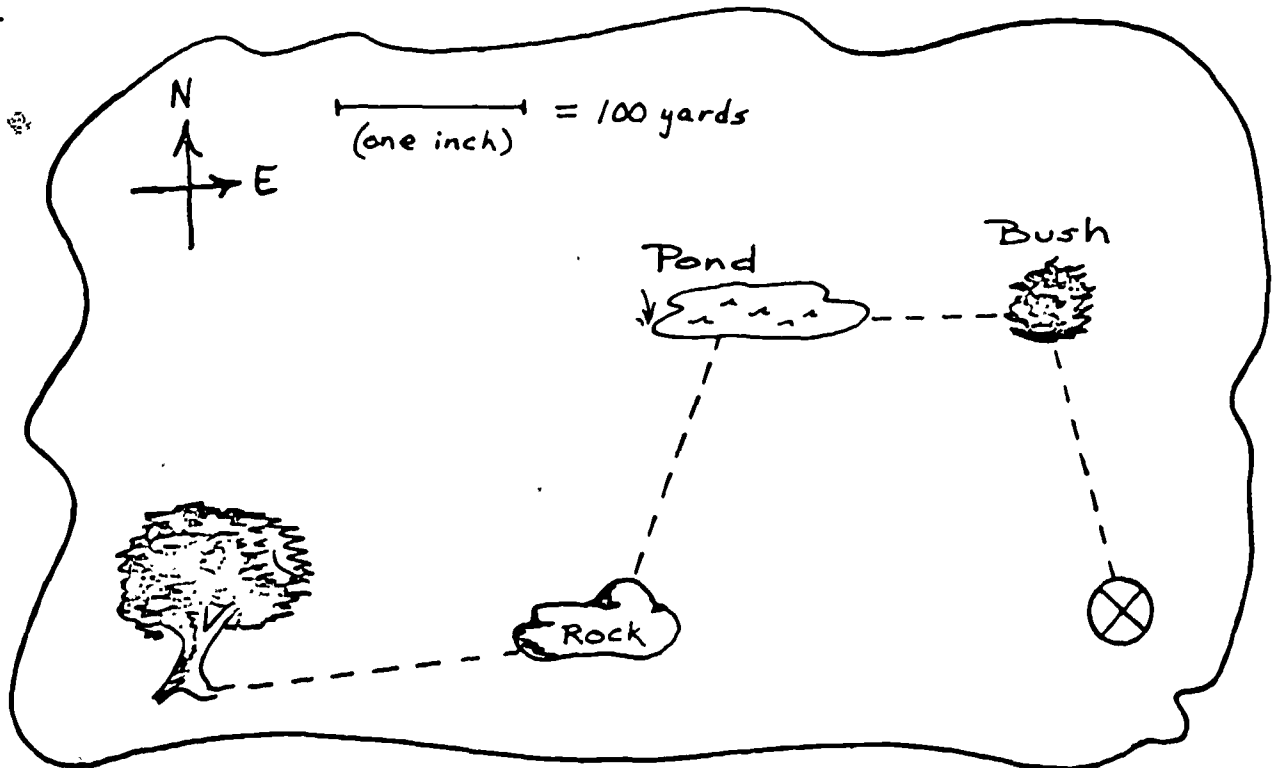
36. In which year did he make the most money?
- 1972
 - 1973
 - 1974
 - 1975
37. How much more money did he make in 1973 than in 1972?
- \$ 60
 - \$ 42
 - \$ 18
 - \$ 15

The Weisman's drew a circle chart of the money they spent on their vacation. Each dollar was spent as follows:



38. About one-fourth of their vacation money was spent on
- motels.
 - boarding their pets at the kennel.
 - gas for the car.
 - food.
39. If the Weismans spent \$ 200 on their vacation, how much money did they spend on gas?
- \$ 15
 - \$ 30
 - \$ 100
 - 25 ¢

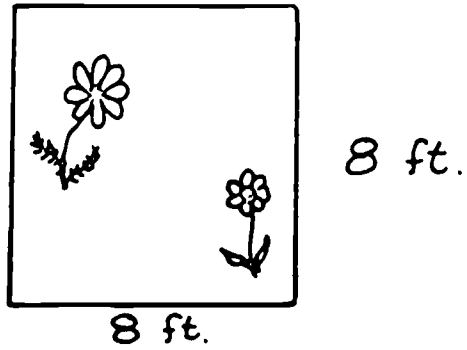
40.



On the map, it is one and one-half inches from the bush to the treasure (X). If one inch on the map stands for 100 yards on land, how many yards is it from the bush to the treasure?

- a. 100 yards
 - b. 150 yards
 - c. 100 yards and 1 inch
 - d. 50 yards
41. Karla earned \$ 6 on Monday, \$ 2 on Tuesday, and \$ 4 on Wednesday. What were her average earnings for these three days?
- a. \$ 6
 - b. \$ 4
 - c. \$ 2
 - d. \$ 12

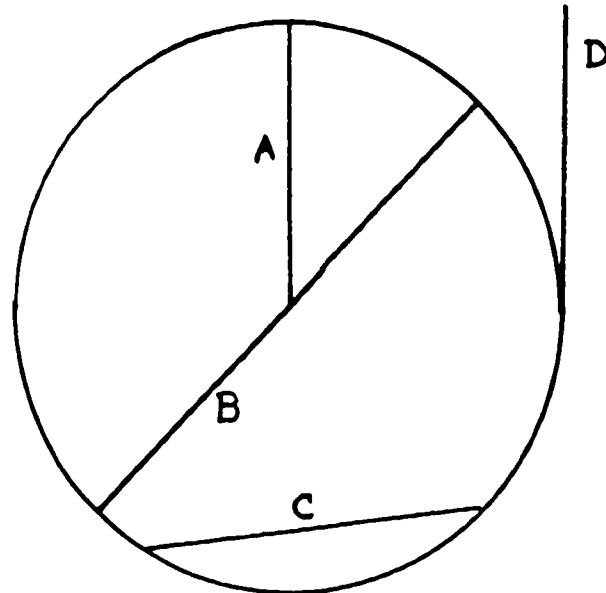
42. Mrs. Wackwitz's square flower garden is 8 feet long on each side:



What is the distance around her flower garden?

- a. 8 ft.
- b. 16 ft.
- c. 64 ft.
- d. 32 ft.

43.



Which line is a diameter of the circle?

- a. A
- b. B
- c. C
- d. D

44.

• • • •
• • • •
• • • •
• • • •

16

• • • •
• • • •

8

• •
• •

4

What pattern of dots and what number should appear above the line to complete the sequence?

a. • •

•
• •

5

b. • •

2

c. •

1

d. •

• •

3

45. $631 = 600 + S + 1$ What must S be?

a. 3

b. 30

c. 300

d. 31

46. How should you read this number? 70,130,000,000

a. Seventy billion, one million thirty thousand

b. Seven million, one hundred-thirty billion

c. Seventy trillion, one hundred-thirty billion

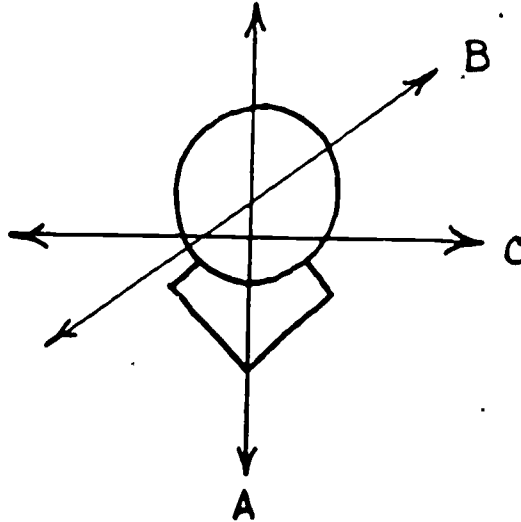
d. Seventy billion, one hundred-thirty million

47. Which is probably the largest number?
- The number of trees in Colorado
 - The number of people in Colorado
 - The number of pages in the Denver phone book
 - The number of days in 10 years.
48. George discovered how to change any measurement in inches into centimeters. Bob gave George measurements in inches and George would tell him the length in centimeters.

Bob gave the number	George said
1"	2.54 cm
2"	5.08 cm
4"	10.16 cm

What will George say when Bob gives him "10 inches."

- 10 cm
 - 2.54 cm
 - 5 cm
 - 25.4 cm
49. $(6 \times 9) = (n + 3) \times 9$
- What is the number that n stands for?
- 6
 - 3
 - 9
 - 0
50. Most envelopes look like
- circles
 - cones
 - cubes
 - rectangles
51. The tip of a knife blade usually forms
- a right angle
 - an acute angle
 - an obtuse angle
 - a square angle



Which line divides the figure into two matching halves? That is, which line is a line of symmetry?

- a. A
 - b. B
 - c. C
53. Tom's heart beats about 70 times each minute. How many times does it beat in a day?
- a. 7,000
 - b. 70×24
 - c. 70×60
 - d. $70 \times 60 \times 24$
54. Each month Mr. Brown sends 15% of his paycheck to his daughter in Illinois. His pay is \$900 per month. How much money does he send his daughter each month?
- a. \$ 15
 - b. \$ 9
 - c. \$ 135
 - d. \$ 150

ADVANTAGES NAMED BY YRS TEACHERS

<u>ADVANTAGE</u>	<u>FREQUENCY</u>
Less review/less loss of learning	32
Enthusiasm and interest for teachers and students	15
Frequent breaks allow physical and mental restoration	15
More vacation flexibility for parents	15
Better use of tax money (schools used all year)	10
Possibility for outdoor education in summer	9
Teachers can earn more money	5
Special education and remedial students can get extra work	3
Continuity	3
Year-round vacations	3
Eases overcrowding	2
Flexible inservice	1
Less disruption	1
Less vandalism	1
Less chance for kid to be bored during vacation	1

DISADVANTAGES NAMED BY YRS TEACHERS

<u>DISADVANTAGE</u>	<u>FREQUENCY</u>
Extra work, extra record-keeping, organization, responsibility	29
Teachers burn out with constant work	19
Interference with family vacations	12
Students who are off-track have nothing to do	9
Organizational problems with tracking	9
Interference with college courses, impossible to get masters degrees	7
Communication problems, faculty rarely can get together	6
Parents take kids out of school not according to track schedule	2
Some people in the district are prejudiced against YRS	2
Interference with extra-curricular activities	1
Lack of air conditioning during summer term	1
Late-arriving materials	1
Kindergarten children are too young to start in July	1
Hard for teacher to supplement income	1