

MATHEMATICS (8TH GRADE)—JUNE 1958 (1)

Part I

Answer all questions in this part. Write the answer to each question on the line at the right. Questions 1-20 count 2 credits each; no partial credit is allowed. Questions 21-30 count 1 credit each. Reduce each answer to its simplest form.

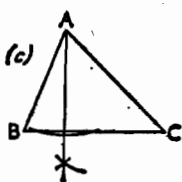
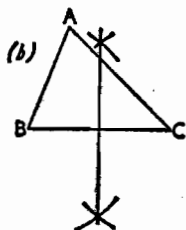
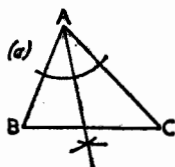
1. Add: \$245, \$63.25, \$.98, \$7.92, \$10.16
2. Subtract $14\frac{1}{2}$ from 30
3. Divide 12 by $1\frac{1}{2}$
4. Multiply \$1.08 by $6\frac{1}{4}$
5. Divide 73.44 by 2.4
6. Change $\frac{3}{8}$ to a percent.
7. A certain kind of cloth is a mixture of 50% wool, 37% cotton and the remainder rayon. What percent of the cloth is rayon?
8. The first man-made satellite is said to have traveled at 18,000 miles per hour. Express this speed in miles per minute.
9. A man drives his car over a toll bridge on his way to and from work. The toll charge is either 15¢ for each one-way crossing, or \$5 for a commuter's book of fifty one-way tickets. For fifty crossings, how much will this man save by buying the book of tickets?
10. In a dictionary, the scale drawing of a bird is $\frac{1}{2}$ actual size. If the drawing is $\frac{1}{4}$ inch high, find in inches the height of the real bird.
11. Last year 57,546 schools took part in the federal school lunch program. Round off this number to the nearest thousand.
12. An advertisement says that the new box of a detergent contains $33\frac{1}{3}\%$ more than the old 15-ounce box. How many ounces does the new box contain?
13. A game began at 11:45 a.m. and ended at 2:15 p.m. How many hours and minutes did the game last?
14. A boy saved \$5 by buying a jacket at a sale where a 25% discount was given. What was the original price of the jacket?
15. If the area of a square rug is 64 square feet, find in feet the length of each side.
16. A boy sold \$60 worth of magazine subscriptions, for which he was paid \$18. What rate of commission was he paid?
17. Mrs. A has two quarts of fruit juice which she is pouring into $\frac{1}{2}$ -pint glasses. How many glasses can she fill with the fruit juice?
18. A girl whose salary is \$3,200 a year has $2\frac{1}{4}\%$ of it deducted for Social Security. How much is deducted for this purpose?
19. A team won 25 games and lost 8. What is the ratio of the number of games won to the number of games played?
20. What amount of interest is due at the end of 3 months on a loan of \$2,000 if the yearly interest rate is 5%?

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Directions (21-30): Indicate the correct completion for each of the following by writing on the line at the right the letter *a*, *b* or *c*.

21. An angle which contains less than 90 degrees is (a) an obtuse angle (b) a straight angle (c) an acute angle

22. In which diagram has a perpendicular been constructed from *A* to *BC*?



23. A right triangle may be (a) equilateral (b) isosceles (c) equiangular

24. Which geometric figure has more than 5 sides? (a) hexagon (b) rectangle (c) pentagon

25. Printed paper labels are pasted completely around the surface of cylindrical paint cans like the one in the diagram. The shape of such a label before it is pasted on the can is a (a) semicircle (b) circle (c) rectangle



26. The algebraic expression $3n$ means (a) $3 + n$ (b) $n + n + n$ (c) $n \times n \times n$

27. The formula for finding the circumference of a circle is (a) $C = \pi r$ (b) $C = \pi r^2$ (c) $C = 2\pi r$

28. If $n = \frac{1}{2}$, the value of n^2 is (a) 1 (b) $\frac{1}{2}$ (c) 4

29. To solve the equation $n - 3 = 6$, a student should (a) divide both sides of the equation by 3 (b) add 3 to both sides of the equation (c) subtract 3 from both sides of the equation

30. The n students in a class are divided into 5 equal committee groups. The number of pupils in each group is (a) $5n$ (b) $n + 5$ (c) $\frac{n}{5}$

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Part II

Answer any five questions from this part. No credit will be allowed unless all necessary operations are given. Reduce each result to its simplest form and mark each answer Ans.

31. A home freezer can be bought for \$450 cash or on the installment plan for \$45 down and \$28.80 a month for 15 months. How much would a man save if he bought the freezer by paying cash rather than on the installment plan? [10]

32. In a recent year the school tax in a central school district was \$20.40 per \$1,000 of assessed valuation. In this district, taxes paid within 30 days from the date stamped on the tax bill have 1% of the amount of the bill added as a collection fee. Taxes paid after the 30-day period have a 4% fee added to the 1% collection fee, making a total of 5% to be added. The date stamped on tax bills that year was August 31.

a. A man owned property assessed at \$6,500 in this district. If he paid his taxes on September 15, find the total amount of his bill, including the collection fee. [7]

b. On what date that year did taxpayers begin paying the 5% collection fee? [2]

c. What percent of their tax bills would be saved by all taxpayers who paid within 30 days from August 31 rather than after the 30-day period? [1]

33. To raise money, the members of a club decided to sell novelty desk calendars. They were able to buy the calendars from a local company for \$30 per hundred, subject to a 20% discount if 500 or more calendars were ordered. The club ordered 500 calendars.

a. How much did the club pay for the 500 calendars? [3]

b. How many calendars did they have to sell at 50¢ each to meet exactly the cost of their project? [2]

c. If they were able to sell all but 20 of the calendars they bought, how much profit did they make? [3]

d. Using the answer to c, find what percent of the cost of the project was their profit. [2]

34. A certain newspaper ran a contest in which the following prizes were offered:

One prize of \$50,000

One prize of \$10,000

One prize of \$5,000

One prize of \$2,000

One prize of \$1,000

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- Ten prizes of \$100 each
- Ten prizes of \$50 each
- Ten prizes of \$25 each
- Fifty prizes of \$10 each
- Nine hundred fifty prizes of \$5 each

- a. Find the total amount of prize money offered in this contest. [6]
- b. What percent of the prize money went to the winner of the first prize? [4]

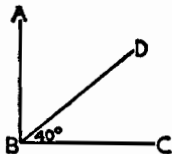
35. Annual Premium and Installment Payments per \$1,000 on Ordinary Life Insurance at Ages from 21 through 25

Age	Annual Premium	Semiannual Installment	Quarterly Installment
21	\$16.62	\$8.48	\$4.32
22	17.08	8.71	4.44
23	17.55	8.95	4.56
24	18.04	9.20	4.69
25	18.56	9.47	4.83

Refer to the above table to answer the following questions:

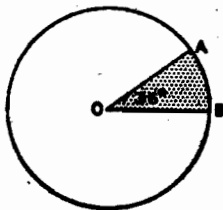
- a. A man bought a \$5,000 ordinary life insurance policy when he was 22 years old.
 - (1) What annual premium does he pay on this policy? [2]
 - (2) If he had chosen to pay his premium quarterly, what would each quarterly installment be? [2]
 - (3) How much does he save each year by making one annual payment rather than by paying his insurance quarterly? [3]
- b. If he were to buy another \$5,000 ordinary life insurance policy at age 25, how much more would the annual premium on this policy be than that on the policy he took out when he was 22 years old? [3]

36. a. In the diagram, angle ABC is a right angle. Angle DBC contains 40° . How many degrees are there in angle ABD ? [2]

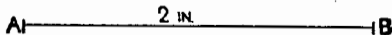


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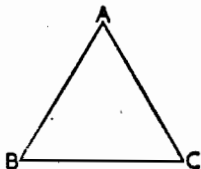
- b. O is the center of the circle at the right. If angle AOB in the circle contains 36° , what percent of the circle is shaded? [2]



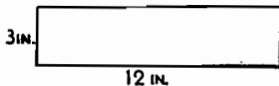
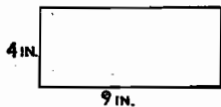
- c. The line AB , which is 2 inches long, is the scale length of a distance of 200 feet. Using the same scale, find in inches the length of the line which should be used to represent 350 feet. [2]



- d. The three sides of the triangle in the diagram are equal. How many degrees are there in angle B ? [2]



- e. Which best completes the statement? The two rectangles below are (1) similar (2) congruent (3) equal in area [2]

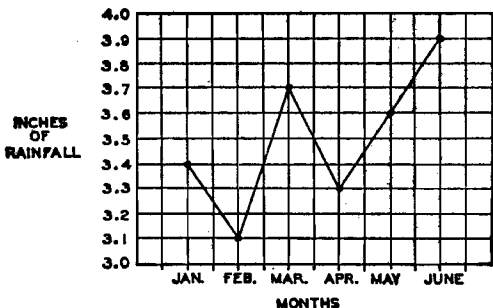


37. The eighth graders sold 75 more tickets for the school play than the seventh graders.
- If n represents the number of tickets sold by the seventh graders, (1) express in terms of n the number of tickets sold by the eighth graders [1]
 - (2) express in terms of n the total number of tickets sold by pupils of both grades [2]

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- b. (1) If 435 tickets for the play were sold by the seventh and eighth graders together, write a correct equation which can be used to find the value of n . [4]
(2) Solve this equation for n . [2]
(3) Find the number of tickets sold by the eighth graders. [1]

38. The graph below shows the average monthly rainfall for the first six months of a year in a certain city.



- a. In which month was the rainfall greatest? [1]
b. How many inches less rain were there in February than in March? [2]
c. List the six months and write the number of inches of rainfall shown for each month. [3]
d. Find the total number of inches of rainfall for the six months. [2]
e. Find the number of inches in the average monthly rainfall for the six months. [2]