PRACTICE TEST

PART I

Directions: Allow yourself 45 minutes to complete this part of the test. You may use a calculator when necessary. Refer to the formulas on page 130 as needed.

1. In its first year, an Internet company spent $27.9 billion on advertising and made $9.3 billion in profits. What was the ratio of advertising dollars to profits? Reduce your answer to simplest terms.

(1) 1:3
(2) 3:1
(3) 3:9
(4) 9:3
(5) 27:9

2. The Consumer Products Safety Commission recently found that 4 out of 5 cribs provided at U.S. hotels are unsafe. What percentage of the cribs are unsafe?

(1) 75%
(2) 80%
(3) 88%
(4) 90%
(5) 125%

3. Sue Ellen spent $45.00 on a glass vase for her antiques shop. She wants to make a profit of $4.00 on every $6.00 she spends. Which expression shows the price at which she should sell the vase?

(1) $45 \times 3\,4$
(2) $45 \times \frac{6}{4}$
(3) $\frac{4 \times 45}{6}$
(4) $45 + (\frac{4}{6} \times 45)$
(5) $45 + (45 \times 4)$

4. Sue Ellen is buying a new shelving system for her store. She can buy glass shelves that are 6 inches deep and 3 feet wide, or she can buy wooden shelves that are twice as wide and twice as deep. How many times as much space is there on each wooden shelf?

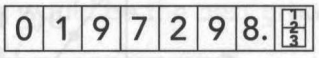
Mark your answer in the circles in the grid on the answer sheet.

5. Melanie wants to know how far she has driven in one day.

The drawings below show the mileage gauge on her car at the beginning and at the end of her trip. To the nearest tenth of a mile, how far did Melanie travel?

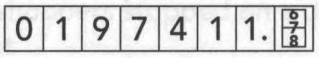
Mark your answer in the circles in the grid on the answer sheet.

Before trip



miles

After trip



miles

6. Which of the following expressions has the same value as $x^2 \times x^5$?

(1) x^7
(2) x^{10}
(3) $2x^7$
(4) $2x^{10}$
(5) x^{11}

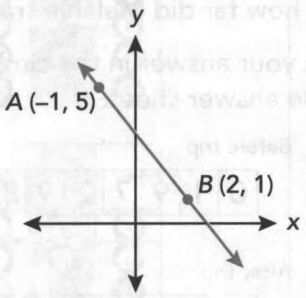
PRACTICE TEST

7. In a certain restaurant chain, a serving of macaroni and cheese is $\frac{2}{3}$ cup. Which expression shows how many servings are in a 5-gallon (80-cup) tub of macaroni and cheese?

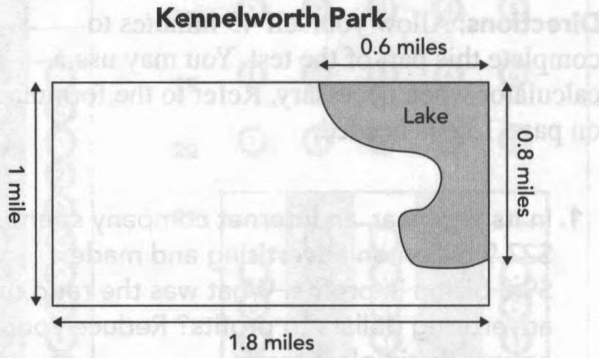
(1) $80 \times \frac{2}{3}$
(2) $80 \times \frac{3}{2}$
(3) $\frac{80+2}{3}$
(4) $\frac{80-2}{3}$
(5) $\frac{80-3}{2}$

8. What is the slope of the line that passes through points *A* and *B*?

(1) $\frac{5}{2}$
(2) $-\frac{5}{2}$
(3) $-\frac{4}{3}$
(4) $\frac{3}{4}$
(5) $-\frac{3}{5}$



Question 9 refers to the following map.



9. Which is the best estimate of how many square miles of dry land Kennelworth Park contains?

(1) 1.1
(2) 1.5
(3) 1.75
(4) 1.8
(5) 2.1

Directions: Questions 10–12 refer to the following chart.

COST OF RUNNING VARIOUS TYPES OF WATER HEATERS

(To estimate your water heating bill, locate the price you pay for gas, electricity, or propane on the chart below.)

Natural Gas		Propane		Electricity	
Price per therm	Yearly Cost	Price per gallon	Yearly Cost	Price per kilowatt-hour	Yearly Cost
$0.50	$136	$0.95	$283	$0.08	$390
$0.60	$163	$1.05	$313	$0.10	$488
$0.70	$190	$1.15	$343	$0.12	$585

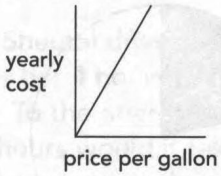
Source: California Energy Commission

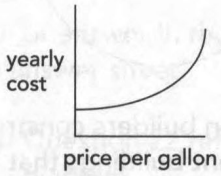
PRACTICE TEST

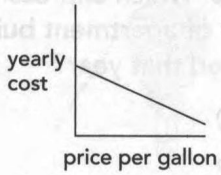
10. If the fuel prices shown on this chart are typical, which type of water heater is least expensive to run?

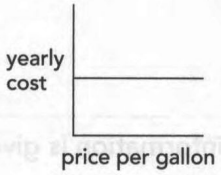
(1) natural gas
(2) propane
(3) electric
(4) It depends on how much hot water you use.
(5) Not enough information is given.

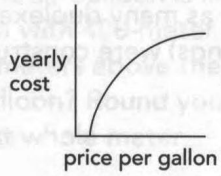
11. Which of these graphs best shows the relationship between the price per gallon of propane and the yearly cost of running a propane water heater?

(1)


(2)


(3)


(4)


(5)


12. What would it cost to run a natural gas water heater for one year in an area where natural gas costs 90¢ per therm?

Mark your answer in the circles in the grid on the answer sheet.

13. Ray is 6 feet tall. One afternoon he measures the length of his own shadow (0.8 feet) and the length of the shadow cast by his house (7 feet). To the nearest tenth of a foot, how tall is the house?

Mark your answer in the circles in the grid on the answer sheet.

14. The owner of Harry's Bicycle Shop is conducting a survey to find out why people shop at his competitor's store. Which of the following would be the best group for him to survey?

(1) 200 children at local grade schools
(2) 200 shoppers stopped on a downtown street
(3) 200 participants in the town's annual bike tour
(4) 2 people stopped outside the competitor's store
(5) 1000 people who subscribe to a national magazine on biking

PRACTICE TEST

15. The table below shows how people in different age groups responded to the question, "How would you rate the service you've received at Harry's Bicycle Shop?"

Age	Awful	Poor	OK	Good	Great
12 and under	0	5	18	22	35
13-18	20	8	6	34	32
19-25	18	13	19	29	21
26-35	39	31	22	5	3
36 and over	29	23	28	11	9

These data suggest that the staff at Harry's should concentrate most on improving service to people in which age group?

(1) young children
(2) teenagers
(3) young adults
(4) people over 25
(5) senior citizens

16. Suppose you toss three pennies into the air and they land on the floor. What is the probability that two pennies will land heads up and one will land tails up?

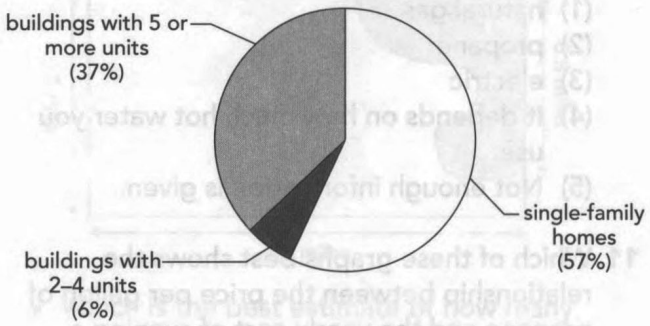
(1) 1 chance out of 6
(2) 1 chance out of 8
(3) 2 chances out of 8
(4) 3 chances out of 6
(5) 3 chances out of 8

17. For the equation $y = 3x - 2$, what are the coordinates of a point when $x = 2$.

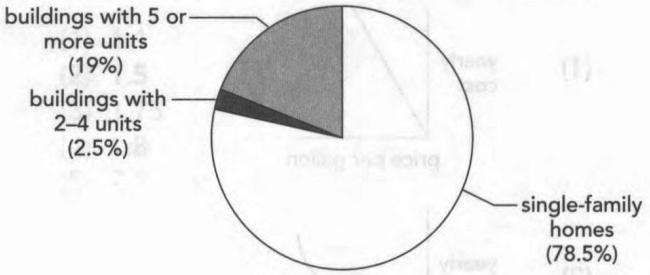
Mark your answer on the coordinate plane grid on the answer sheet.

Directions: Questions 18–20 refer to the graphs below.

HOUSING BUILT IN 1970



HOUSING BUILT IN 1998



18. In 1998, American builders constructed 307,000 apartment buildings that contained five or more units. Which expression shows the total number of apartment buildings and homes constructed that year?

(1) $19 \times 307{,}000$
(2) $307{,}000 \times \frac{19}{100}$
(3) $\frac{19}{307{,}000} \times 100$
(4) $\frac{307{,}000}{0.19}$
(5) Not enough information is given.

19. How many times as many duplexes (2-unit apartment buildings) were constructed in 1970 as in 1998?

(1) 2
(2) 2.4
(3) 3
(4) 3.5
(5) Not enough information is given.

PRACTICE TEST

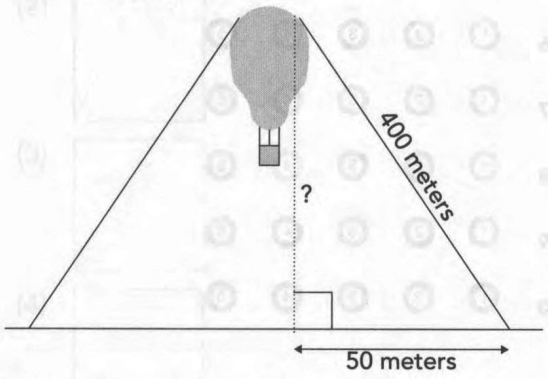
20. Which of the following generalizations can be made based solely on the data in these graphs?

(1) More housing was built in 1998 than in 1970.
(2) Apartment buildings are less profitable today than in 1970.
(3) People had more money to spend on housing in 1998 than in 1970.
(4) In 1970, there were more people living in houses than in apartments.
(5) For every apartment building constructed in 1998, nearly four houses were built.

21. When Sheetal drives 80 kilometers per hour, it takes her 4 hours to get to her mother's house. To the nearest tenth of an hour, how many hours would it take her if she drove 100 kilometers per hour?

Mark your answer in the circles in the grid on the answer sheet.

Directions: Question 22 refers to the following diagram.



22. This hot-air balloon is anchored to the ground with 400-meter cables. About how many meters above the ground is the top of the balloon? Round your answer to the nearest whole meter.

Mark your answer in the circles in the grid on the answer sheet.

23. Yolanda's new living room is 180 inches long. Which expression shows how many yards that is?

(1) $\frac{180}{12 \times 3}$
(2) $\frac{180}{12}$
(3) $\frac{180}{12 \div 4}$
(4) $180 \times 12 \times 3$
(5) $\frac{180 \times 3}{12}$

Directions: Question 24 refers to the following chart.

Monthly Rent	
Studio (no bedroom)	$450
1 bedroom	$575
2 bedrooms	$700
3 bedrooms	$825

24. Which formula expresses the relationship between the number of bedrooms in an apartment (b) and the monthly rent charged for it?

(1) rent = $\$450b$
(2) rent = $\$125b$
(3) rent = $\$275b$
(4) rent = $\$450(b + 1)$
(5) rent = $\$450 + \$125b$

25. Ten thousand shares of stock have been issued for Wise Electronics. A businessman owns 1,345 shares now. He wants to own 51% of the company's stock. Which expression shows how many shares he must buy?

(1) $\frac{51}{100} \times 10{,}000$
(2) $0.51(10{,}000) - 1345$
(3) $\frac{51}{100}(10{,}000 - 1345)$
(4) $0.51(10{,}000) - 0.51(1345)$
(5) $\frac{51(10{,}000) - 1345}{100} \times 100$

PRACTICE TEST

Practice Test Answer Grid, Part II

26 ① ② ③ ④ ⑤

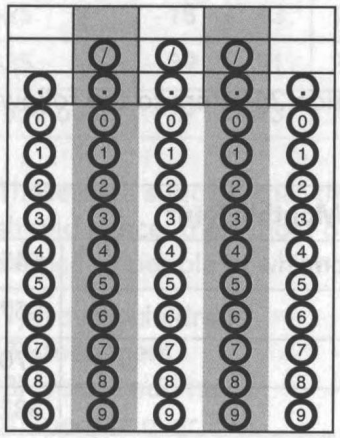
27 ① ② ③ ④ ⑤

28 ① ② ③ ④ ⑤

29 ① ② ③ ④ ⑤

30 ① ② ③ ④ ⑤

31



32 ① ② ③ ④ ⑤

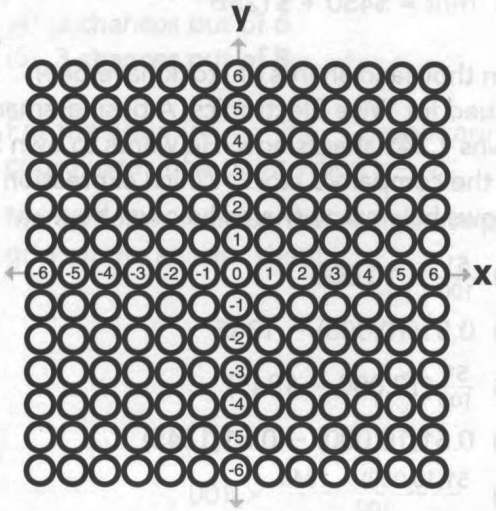
33 ① ② ③ ④ ⑤

34 ① ② ③ ④ ⑤

35 ① ② ③ ④ ⑤

36 ① ② ③ ④ ⑤

37



38 ① ② ③ ④ ⑤

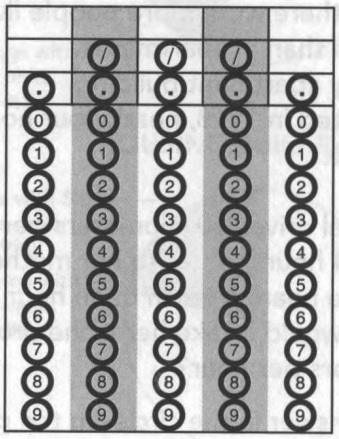
39 ① ② ③ ④ ⑤

40 ① ② ③ ④ ⑤

41 ① ② ③ ④ ⑤

42 ① ② ③ ④ ⑤

43



44 ① ② ③ ④ ⑤

45 ① ② ③ ④ ⑤

46 ① ② ③ ④ ⑤

47 ① ② ③ ④ ⑤

48 ① ② ③ ④ ⑤

49 ① ② ③ ④ ⑤

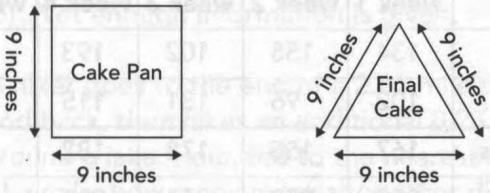
50 ① ② ③ ④ ⑤

PRACTICE TEST

PART II

Directions: You are NOT permitted to use a calculator on this part of the test. Allow yourself 45 minutes to complete this part, using paper and pencil to figure your answers. Refer to the formulas on page 130 as needed.

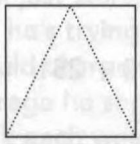
Directions: Questions 26 and 27 refer to the following diagrams which show a triangular cake that must be cut from a cake baked in a square pan.



26. Which option below shows how the final cake must be cut from a cake that is a 9-inch square?

(1)

(2)



(3)

(4)

(5) The cake cannot be cut from a 9-inch square.

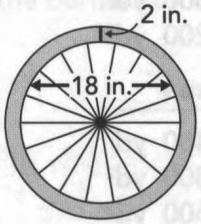
27. The baker can be certain that her cake is identical (congruent) to the model if her cake has which of the following?

(1) at least two 9-inch sides
(2) three angles whose sum is 180°
(3) a 45° angle and at least two 9-inch sides
(4) at least two 60° angles and one 9-inch side
(5) three angles identical to the angles in the model

28. Toni thinks that the outer walls of a certain high-rise are perfectly parallel, but a friend insists that they tilt inward. Toni could prove that the walls are parallel if she showed that which of the following is true? (Assume that the walls do not curve.)

(1) The roof is a perfect square.
(2) All four walls are the same height.
(3) There are the same number of rooms on each floor.
(4) The building's shadow is perpendicular to the building.
(5) The walls all form 90-degree angles with the flat ground.

Directions: Question 29 refers to the following diagram.

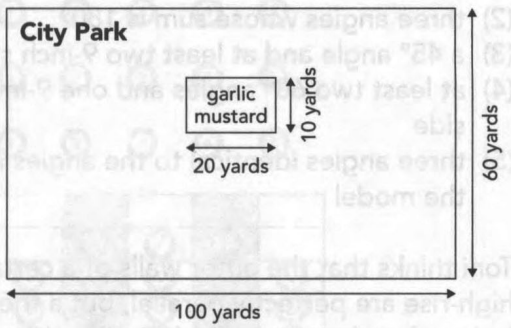


29. To program the computer on an exercise bike, you must enter the circumference of the front wheel. Which expression shows the circumference, in inches, of the bicycle wheel above?

(1) 3.14×6
(2) 3.14×8
(3) 3.14×10
(4) 3.14×12
(5) Not enough information is given.

PRACTICE TEST

Directions: Questions 30 and 31 refer to the following map which shows measurements taken by a naturalist studying the spread of wild garlic mustard.



30. The patch of garlic mustard is doubling in size every 4 years. Which table correctly shows how large the patch will be at various points in the future?

(1)

year	area
4	400 yd²
8	800 yd²
12	1600 yd²
16	3200 yd²

(2)

year	area
1	400 yd²
2	800 yd²
3	1600 yd²
4	3200 yd²

(3)

year	area
4	400 yd²
6	800 yd²
8	1600 yd²
10	3200 yd²

(4)

year	area
4	400 yd²
8	600 yd²
12	800 yd²
16	1000 yd²

(5)

year	area
4	400 yd²
8	800 yd²
16	1600 yd²
32	3200 yd²

31. What fraction of City Park is now covered with garlic mustard? Express your answer in simplest terms.

Mark your answer in the circles in the grid on the answer sheet.

Directions: Questions 32 and 33 refer to the following chart.

Number of Diners at Maxine's Restaurant

	week 1	week 2	week 3	week 4	week 5
Tues.	134	155	102	193	140
Wed.	102	96	131	115	121
Thurs.	167	155	178	182	162
Friday	210	232	264	256	239
Sat.	215	247	256	290	251
Sun.	88	109	100	88	117

32. Which expression shows the mean number of diners on Saturdays?

(1) $\frac{290 - 215}{2}$

(2) $\frac{290 - 215}{5}$

(3) $215 + 247 + 256 + 290 + 251$

(4) $\frac{215 + 247 + 256 + 290 + 251}{5}$

(5) $\frac{215 \times 247 \times 256 \times 290 \times 251}{5}$

33. Which of the following is the best prediction of how many diners Maxine's will have next Sunday?

(1) 88
(2) 92
(3) 100
(4) 117
(5) 121

PRACTICE TEST

34. Between 1997 and 2000, there was a 200% increase in direct payments the government made to farmers. If the government gave farmers $1.8 billion in 1997, which expression shows how many billions of dollars it gave farmers in 2000?

(1) 1.8×3
(2) 1.8×2
(3) 1.8×0.2
(4) $\frac{1.8}{0.2}$
(5) Not enough information is given.

35. A hiker goes to the end of a 2.86-mile trail and back, then hikes an additional 0.23 miles around a lake. Rounded to the nearest tenth of a mile, how many miles altogether did she hike?

(1) 3.1
(2) 4.2
(3) 5.7
(4) 6.0
(5) 6.5

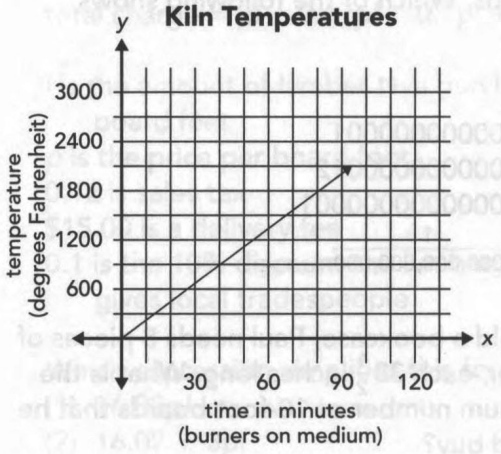
36. Zack just started working out of his home, and he's trying to figure out how much he should charge his clients per hour. On average he should get about 22 hours of work each week, including holidays. Which expression could he use to estimate his yearly earnings at various rates of pay (r)?

(1) $r \times 22 \times 52$
(2) $\frac{22}{r} \times 52$
(3) $\frac{22 \times 52}{r}$
(4) $\frac{52r}{22}$
(5) $\frac{22r}{52}$

37. Show the location of the point whose coordinates are (–1, –5).

Mark your answer on the coordinate plane grid on the answer sheet.

Directions: Questions 38–40 refer to the following graph which shows how quickly a potter's kiln heats up.



38. If the burners are left on medium for 80 minutes, how hot will the kiln get in degrees Fahrenheit?

(1) 1220°
(2) 1500°
(3) 1800°
(4) about 2000°
(5) Not enough information is given.

39. Which is the best estimate of how hot the kiln will be, in degrees Fahrenheit, after 1 hour with the burners on medium?

(1) 1210°
(2) 1220°
(3) 1250°
(4) 1350°
(5) 1500°

40. If you were to leave the burners on medium for 2 hours, and if the kiln temperature increased at the same rate, how hot would the kiln get in degrees Fahrenheit?

(1) 2400°
(2) 2700°
(3) 3000°
(4) 3300°
(5) Not enough information is given.

PRACTICE TEST

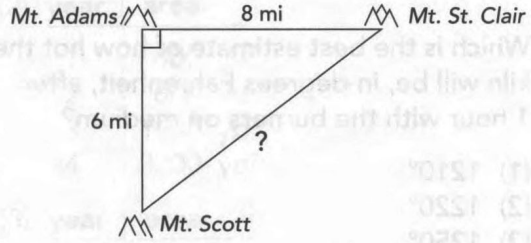
41. In August of 1999, NASA used a slingshot maneuver to shoot a probe into space. That maneuver slowed Earth's rotation by 10^{-12} seconds. Which of the following shows 10^{-12}?

(1) $\frac{10}{12}$
(2) 0.00000000001
(3) 0.000000000012
(4) 0.0000000000001
(5) $\frac{1}{1{,}000{,}000{,}000{,}000}$

42. To build a bookcase, Paul needs 8 pieces of lumber, each $38\frac{1}{2}$ inches long. What is the minimum number of 10-foot boards that he should buy?

(1) 1
(2) 2
(3) 3
(4) 4
(5) 5

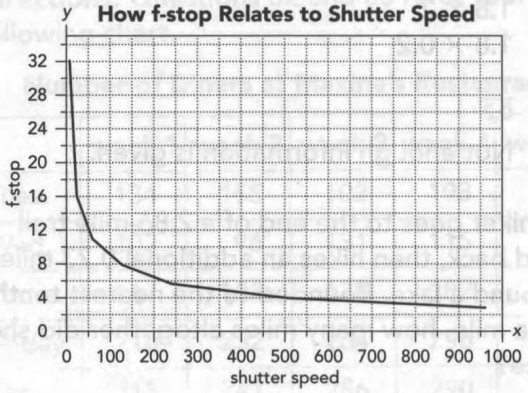
Directions: Question 43 refers to the following diagram.



43. Bill wants to hike directly from Mt. Scott to Mt. St. Clair. Use the diagram to determine how far, in miles, Bill will hike.

Mark your answer in the circles in the grid on the answer sheet.

Directions: Questions 44–46 refer to the following graph which shows various settings on a camera. All points on the curve let exactly the same amount of light reach the film. An f-stop indicates the width of the opening into the camera. Shutter speed indicates how long light is allowed through that opening in fractions of a second.



44. On the graph, approximately what f-stop corresponds to a shutter speed of 300?

(1) 4.5
(2) 5.5
(3) 6
(4) 6.5
(5) 7

45. On this graph, every time the f-stop is divided in half, what happens to the shutter speed?

(1) It is multiplied by four.
(2) 500 is added.
(3) It is doubled.
(4) 200 is added.
(5) It is divided in half.

46. What is the *x*-intercept for this graph?

(1) (0, 1000)
(2) (1000, 0)
(3) (0, 1500)
(4) (1500, 0)
(5) There will not be one.

PRACTICE TEST

Directions: Questions 47–49 refer to the following information.

Nya makes and sells lawn chairs. The materials for each chair cost $18.00, and she sells the chairs for $45.00 each.

47. What percentage of the sale price does Nya keep as profit? (Don't consider expenses other than materials.)

(1) 16
(2) 27
(3) 40
(4) 60
(5) 66

48. Besides materials, Nya spends money on advertising, taxes, and rent. Her total yearly budget for those expenses is $13,400. Which expression shows how many lawn chairs (x) she must sell before she starts making money?

(1) $45x = 13{,}400$
(2) $x = \frac{13{,}400}{18}$
(3) $x(45 - 18) = 13{,}400$
(4) $x = 13{,}400 \times (45 - 18)$
(5) Not enough information is given.

49. Nya's local lumber yard uses the following formula to determine how much to charge her.

total charge $= pl + 0.12pl - 0.1pl + \$15.00$

l is the amount of lumber Nya purchases, in board feet
p is the price per board foot
0.12 is sales tax
$15.00 is a delivery fee
0.1 is the 10% discount the lumberyard gives local tradespeople

Which expression simplifies this formula?

(1) $16.02pl$
(2) $16.02 + 3pl$
(3) $1.22pl + 15.00$
(4) $0.20pl + 15.00$
(5) $1.02pl + 15.00$

50. Antonio's Pizza would like to start selling square pizzas that require the same quantity of dough and toppings as the round pizzas they sell now. Which equation could the company use to figure out how many inches long to make the sides (s) of each new square pizza? Let d represent the diameter of the old, round pizzas.

(1) $\frac{d}{2} = s$
(2) $2d = s^2$
(3) $\pi d = s^2$
(4) $\pi(\frac{d}{2})^2 = \sqrt{s}$
(5) $\pi(\frac{d}{2})^2 = s^2$

Answers are on page 126.

PRACTICE TEST

Answer Key

Part I

1. (2) 3:1 $27.9 \div 9.3 = 3$, so the ratio is 3:1

2. (2) 80% $4 \div 5 = 0.8$

$0.8 \times 100\% = 80\%$

3. (4) $45 + (\frac{4}{6} \times 45)$ Set up a ratio to find her profit (x):

$$\frac{4}{6} = \frac{x}{45}$$

Multiply to isolate x: $\frac{4}{6} \times 45 = x$

Final price = cost + profit = $45 + (\frac{4}{6} \times 45)$

4. 4 If the area on top of each glass shelf is xy, the area on top of each wooden shelf is $(2x)2y$, or $4xy$.

5. 113.5 $197411.7 - 197298.2 = 113.5$

6. (1) x^7 $x^2 = x \times x$

$x^5 = x \times x \times x \times x \times x$

$x^2 \times x^5 = x \times x \times x \times x \times x \times x \times x = x^7$

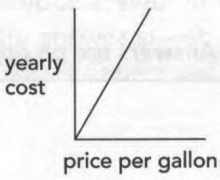
7. (2) $80 \times \frac{3}{2}$ $80 \div \frac{2}{3} = 80 \times \frac{3}{2}$

8. (3) $-\frac{4}{3}$ slope $= \frac{5-1}{-1-2} = \frac{4}{-3} = -\frac{4}{3}$

9. (2) 1.5 The section covered with water is a little less than 0.48 square miles (0.6×0.8). The entire park is 1.8 square miles ($1 \times 1.8 = 1.8$). That means the park must have a little more than 1.32 square miles of dry land ($1.8 - 0.48 = 1.32$).

10. (1) natural gas The yearly costs given for running a natural gas heater are much lower than the other yearly costs given.

11. (1)



The yearly cost rises $30 for every 10¢ rise in the price of propane. Since this is a steady rise, it should be represented as a straight line with the yearly cost and the price per gallon rising together.

12. $244 The yearly cost of gas heaters rises $27 for every 10¢ rise in the price of natural gas. 90¢ is twenty cents more than the highest value given on the chart, so the yearly cost would be $190 + $27 + $27 = $244.

13. 52.5 $\frac{h}{7} = \frac{6}{0.8}$

$$h = \frac{6 \times 7}{0.8} = 52.5$$

14. (3) 200 participants in the town's annual bike tour

This group would include a significant number of potential customers.

15. (4) people over 25 For the most part, people in the 26–35 age group and people in the 36+ age group agreed that service was bad at Harry's.

16. (5) 3 chances out of 8

Penny 1	Penny 2	Penny 3	
heads	heads	heads	
heads	heads	tails	←
heads	tails	heads	←
heads	tails	tails	
tails	heads	heads	←
tails	heads	tails	
tails	tails	heads	
tails	tails	tails	

17. (2, 4) Your mark should be in the upper right-hand section of the grid.

Start at (0, 0). Count 2 units to the right and four units up.

When $x = 2$, $y = 3(2) - 2 = 6 - 2 = 4$.

18. (4) $\frac{307{,}000}{0.19}$ To find the whole, divide the part by the percent. And remember, 19% is 0.19 or $\frac{19}{100}$.

PRACTICE TEST

19. (5) Not enough information is given.

The graphs don't tell you how many 2-unit buildings were constructed in either year. They lump 2-, 3-, and 4-unit housing together.

20. (5) For every apartment building constructed in 1998, nearly four houses were built.

This graph doesn't tell you anything about the actual number of homes built or about the people living in them.

21. 3.2 Distance = 80 kph × 4 hours = 320 kilometers

New time = 320 k ÷ 100 kph = 3.2 hours

22. 397 $50^2 + h^2 = 400^2$

$h^2 = 160{,}000 - 2{,}500$

$\sqrt{157{,}500} = 396.8627$ or about 397

23. (1) $\frac{180}{12 \times 3}$ Convert inches to feet: $\frac{180}{12}$

Convert feet to yards: $(\frac{180}{12}) \div 3 = \frac{180}{12 \times 3}$

24. (5) rent = \$450 + \$125*b*

The rent is \$450 when $b = 0$. After that, the rent increases \$125 for every added bedroom.

25. (2) 0.51(10,000) − 1345

Number of shares he needs: 0.51(10,000)

Number of shares he must buy: 0.51(10,000) − 1345

PART II

26. (3) Option (1) would have one side that is too long; (2) would have two extra-long sides, and (4) would be too small all around. But option (3) could work.

27. (4) at least two 60° angles and one 9-inch side

The angles in any triangle add up to 180°, so you can be sure that any triangle with two 60° angles actually has three 60° angles and three equal sides. If one side is 9 inches, all three sides measure 9 inches.

28. (5) The walls all form 90-degree angles with the flat ground.

If the walls all form the same angle with a given plane, they must be parallel.

29. (5) Not enough information is given.

The formula for circumference is $\pi \times$ diameter, and diameter is the width of a circle at its widest point (measured across the circle's center). Neither 18 inches nor 2 inches is the diameter of this circle.

30. (1)

year	area
4	400 yd^2
8	800 yd^2
12	1600 yd^2
16	3200 yd^2

Values in the *year* column increase by 4, while values in the *area* column double.

31. $\frac{1}{30}$ 10 × 20 = 200 sq yd (garlic mustard)

100 × 60 = 6000 sq yd (park)

$\frac{200}{6000} = \frac{200 \div 200}{6000 \div 200} = \frac{1}{30}$

32. (4) $\frac{215 + 247 + 256 + 290 + 251}{5}$

To find a mean or average, add up all values in the set, then divide by the number of values.

33. (3) 100 The data for Sundays don't show any trend up or down, so the average (100.4) or median (100) would be the best way to predict future numbers.

34. (1) 1.8 × 3 200% of \$1.8 billion is \$1.8 billion × 2. If aid increased by 200%, then the figure in 2000 was \$1.8 billion + (\$1.8 billion × 2), or \$1.8 billion × 3.

35. (4) 6.0

$$\begin{array}{r} 2.86 \\ 2.86 \\ +\ 0.23 \\ \hline 5.95 \end{array}$$

5.95 rounded to the nearest tenth becomes 6.0

36. (1) $r \times 22 \times 52$ weekly income = $r \times 22$ yearly income = $r \times 22 \times 52$

PRACTICE TEST

37. Your mark should be in the lower left-hand section of the grid.

Start at (0, 0). Count one unit to the left and five units down.

38. (3) 1800° Eighty minutes is represented by the vertical line to the left of 90. That line intersects with the horizontal line labeled 1800.

39. (4) 1350° After 1 hour (60 minutes), the temperature is halfway between the lines for 1200 and 1500. That's 1350 degrees.

40. (2) 2700° Use a straight-edge to extend the line out to the point that corresponds to 120 minutes. That point is (120, 2700).

41. (2) 0.00000000001 To find 10^{-12}, start with the number 10 and move the decimal point 12 places to the left.

42. (3) 3 Each board makes $\frac{10 \times 12}{38.5} = 3$ pieces and a remainder. To get 8 pieces, Paul needs 3 boards.

43. 10 Use the Pythagorean theorem $a^2 + b^2 = c^2$.

$8^2 + 6^2 = c^2$

$64 + 36 = 100$

$c = \sqrt{100} = 10$

44. (2) 5.5 The point directly above a shutter speed of 300 is a little lower than 6 on the *y*-axis. That means that the value is about 5.5.

45. (1) It is multiplied by four.

The regular shape of the curve tells you that there is a pattern. To find it, look at specific examples, like when f-stop drops from 8 to 4 and shutter speed increases fourfold from 125 to 500.

46. (5) There will not be one.

A curve like this will get close to the *x*-axis, but it will never touch it. After all, the graph shows you how to expose your film to a certain amount of light. If $y = 0$, then no light is allowed in at all.

47. (4) 60 $45 - 18 = 27$

$\frac{27}{45} = 0.6$ or 60%

48. (3) $x(45 - 18) = 13{,}400$
Profits per chair = $45 - 18$
Total profits = $x(45 - 18)$
Before she can make money, profits must equal expenses: $x(45 - 18) = 13{,}400$

49. (5) $1.02pl + 15.00$ $pl + 0.12pl - 0.1pl + 15.00 = (1 + 0.12 - 0.1)pl + 15.00 = 1.02pl + 15.00$

50. (5) $\pi(\frac{d}{2})^2 = s^2$ The old and new pizzas need to have the same areas, so take the formula for the area of a circle and make it equal to the formula for the area of a square. That's solution (5). Remember, radius always equals $\frac{\text{diameter}}{2}$.

PRACTICE TEST

Evaluation Chart

Circle the number of any problem you answered incorrectly. Then find the starting page of each book to review the skills you need to solve the problem.

Problem	Section	*GED Math*	*Complete GED*
	Number Sense and Operations		
9	Estimation	25	742
5, 35	Decimals	75	725
7, 31	Fractions	103	747
1, 13	Ratio and Proportion	137	785
2, 18, 34, 47	Percent	149	793
3, 21, 25, 47	Word Problems	51	702
6	Powers and Roots	32, 34	711
41	Scientific Notation	93, 127	730
	Measurement and Geometry		
23, 42	Units of Measurement	183	873
5	Scales and Gauges	190	889
4, 9, 29, 31	Perimeter, Circumference, Area, and Volume	234	897
13, 26, 27, 28	Triangles, Similarity, and Congruence	263	912
22, 43	Pythagorean Relationship	271	908
	Data, Statistics, and Probability		
10, 12, 15, 18, 19 20, 38, 39, 40, 44	Graphs and Tables	197	820
14, 32, 33	Statistics	217	815
16	Probability	212	810
	Algebra, Functions, and Patterns		
24, 36, 48, 49, 50	Writing Algebraic Equations	294, 306	838
12, 45	Identifying Patterns	197	824
11, 30	Graphing Equations	205, 329	830, 858
17, 37	Coordinate Plane	323	854
8, 46	Slope and Intercepts	331	860

FORMULAS

AREA of a:		
	square	Area = side^2
	rectangle	Area = length × width
	parallelogram	Area = base × height
	triangle	Area = $\frac{1}{2}$ × base × height
	trapezoid	Area = $\frac{1}{2} \times (\text{base}_1 + \text{base}_2) \times \text{height}$
	circle	Area = $\pi \times \text{radius}^2$; π is approximately equal to 3.14.
PERIMETER of a:		
	square	Perimeter = 4 × side
	rectangle	Perimeter = 2 × length + 2 × width
	triangle	Perimeter = $\text{side}_1 + \text{side}_2 + \text{side}_3$
CIRCUMFERENCE of a circle		Circumference = π × diameter; π is approximately equal to 3.14.
VOLUME of a:		
	cube	Volume = edge^3
	rectangular solid	Volume = length × width × height
	square pyramid	Volume = $\frac{1}{3} \times (\text{base edge})^2 \times \text{height}$
	cylinder	Volume = $\pi \times \text{radius}^2 \times \text{height}$; π is approximately equal to 3.14.
	cone	Volume = $\frac{1}{3} \times \pi \times \text{radius}^2 \times \text{height}$; π is approximately equal to 3.14.
COORDINATE GEOMETRY		distance between points = $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$; (x_1, y_1) and (x_2, y_2) are two points in a plane. slope of a line = $\frac{y_2 - y_1}{x_2 - x_1}$; (x_1, y_1) and (x_2, y_2) are two points on the line.
PYTHAGOREAN RELATIONSHIP		$a^2 + b^2 = c^2$; a and b are legs and c the hypotenuse of a right triangle.
TRIGONOMETRIC RATIOS		$\sin = \frac{\text{opposite}}{\text{hypotenuse}}$ $\cos = \frac{\text{adjacent}}{\text{hypotenuse}}$ $\tan = \frac{\text{opposite}}{\text{adjacent}}$
MEASURES OF CENTRAL TENDENCY		mean = $\frac{x_1 + x_2 + \ldots + x_n}{n}$, where the x's are the values for which a mean is desired, and n is the total number of values for x. median = the middle value of an odd number of *ordered* scores, and halfway between the two middle values of an even number of *ordered* scores.
SIMPLE INTEREST		interest = principal × rate × time
DISTANCE		distance = rate × time
TOTAL COST		total cost = (number of units) × (price per unit)