

1. The Brown County School System is opening an all girls academy next school year. The girls will have the opportunity to wear various clothing items as part of their uniform

Tops	Pants	Shoes
Green shirt	Khaki slacks	Dress shoes
Yellow shirt	Blue jeans	
	Khaki skort	White tennis shoes

If the girls choose 1 top, 1 pant, and 1 pair of shoes, how many different ways can they wear their uniform?

- (a) 6
- (b) 12
- (c) 30
- (d) 8

2. Use the picture of the ice cream cone to answer the question below.



Which letter best represents the location of the length of the slant height of the ice cream cone on the number line shown below?



- (a) F
- (b) E
- (c) H
- (d) G

3. Substitute the "x" with the integer that will make the statement below a true statement.

$$(P^x)(P^2) = P^8$$

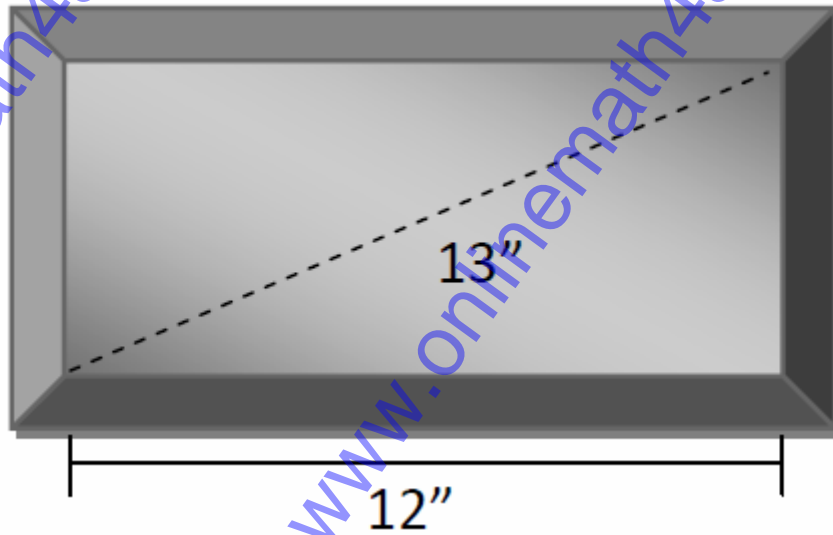
(a) 4

(c) 6

(b) -10

(d) 8

4. The diagram below shows the width of a television and the length of its diagonal. A replacement of the front panel of glass needs to be ordered and is priced by the square inch. Determine the area of the screen.



(a) 156 in<sup>2</sup>

(c) 78 in<sup>2</sup>

(b) 200 in<sup>2</sup>

(d) 60 in<sup>2</sup>

5. A repairman estimated the cost of replacing a part in Mrs. James' computer would be at most \$225. The estimate included \$35 for the part, a \$40 service charge, and \$30 per hour for labor. What is the maximum number of hours the repairman estimated for the job?

(a)  $9/2$

(c)  $11/2$

(b) 5

(d) 6

6. The volume of the cone is  $V = (1/3)\pi r^2 h$ . A farmer needs to determine the height of his silo. Solve the volume of a cone for  $h$ .

(a)  $(-1/3)V\pi r^2$

(c)  $3V$

(b)  $(1/3)V\pi r^2$

(d)  $3V/(\pi r^2)$

7. A salesman used the inequality  $4(2-x) \geq 20$ , in analyzing his inventory. Choose the best description of the graph that represents the solution to  $4(2-x) \geq 20$

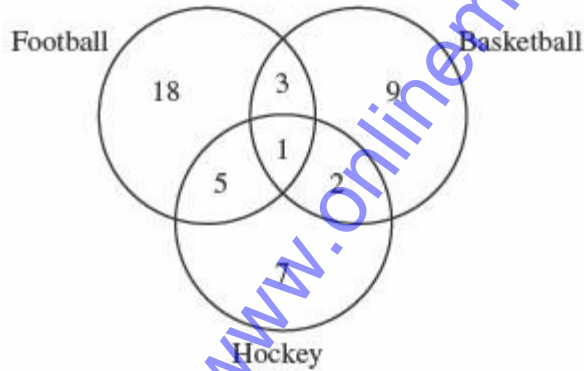
(a) All values to the right of  $-3$  on the number line satisfy  $4(2-x) \geq 20$ .

(b) All values to the right of  $-3$  (including  $-3$ ) on the number line satisfy  $4(2-x) \geq 20$ .

(c) All values to the left of  $-3$  on the number line satisfy  $4(2-x) \geq 20$ .

(d) All values to the left of  $-3$  (including  $-3$ ) on the number line satisfy  $4(2-x) \geq 20$ .

8. Coach Wilson constructed a Venn diagram that shows the number of eighth-grade athletes who play football, basketball, and hockey



How many more athletes play football than basketball?

- (a) 3
- (b) 4
- (c) 9
- (d) 12

9. Which of the following relationships in the form (input, output) does NOT represent a function?

- (a) (state, capital)
- (b) (person, birth date)
- (c) (social security number, person)
- (d) (date, temperature)

10. Michael noticed a pattern on his cell phone bill when he read his text messaging charges.

Cost
\$2.00
\$2.10
\$2.20
\$2.30

Which recursive definition describes Michael's text messaging charges?

(a)  $t_1=2.10, t_n=t_{n-1}-0.10$

(c)  $t_1=2.10, t_n=t_{n-1}-2.00$

(b)  $t_1=2.00, t_n=t_{n-1}+0.10$

(d)  $t_1=2.00, t_n=t_{n-1}+2.10$

11. Music Record Company produces 120 CDs every 10 minutes. What would the slope of the line in a graph of this situation represent?

(a) 120 CDs per minute

(c) 12 CDs per minute

(b) 10 CDs per hour  
minutes

(d) 12 CDs every 10  
minutes

12. Choose the statement that describes the solution to this inequality?

$$y > \frac{2}{3}x + 1$$

- (a) dashed line; half-plane above dashed line
- (b) solid line; half-plane above solid line
- (c) dashed line; half-plane below dashed line
- (d) solid line; half-plane below solid line

13. The table gives the population,  $p$ , in a region of the country as a function of the years since 2003,  $t$ .

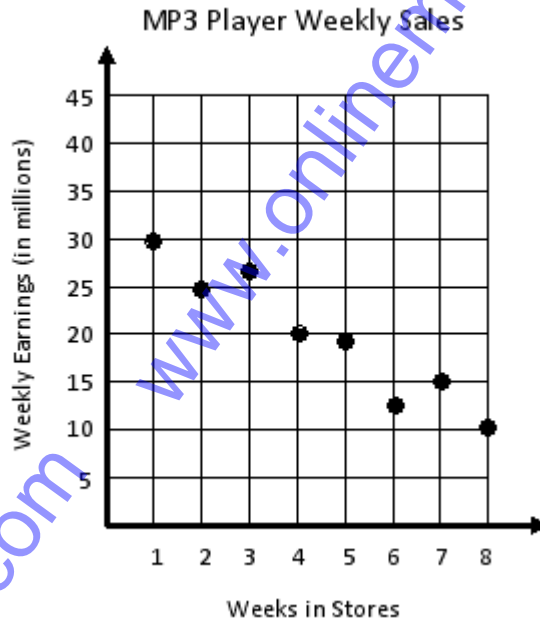
$t$	1	2	3	4
$p$	42,500	43,000	43,500	44,000

Which equation represents this data algebraically?

- (a)  $p = 42,500 + 1,000t$
- (b)  $p = 42,000 + 500t$
- (c)  $p = 42,500 + 500t$
- (d)  $p = 40,000 + 1,500t$



14. This scatter plot shows a relationship between the number of weeks in stores and weekly earnings for an MP3 player.



Which equation would represent the line of best fit for this data?

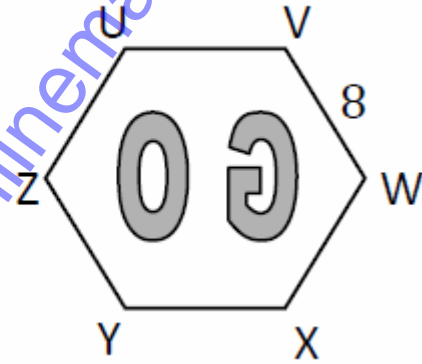
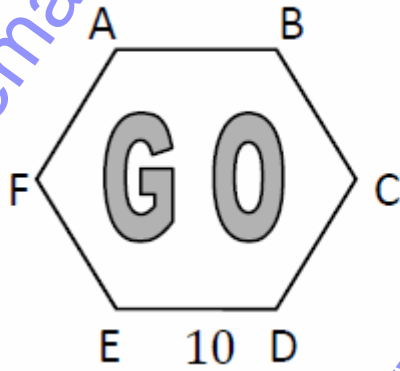
(a)  $y = (-20/7)x + 230/7$

(c)  $y = -x + 35$

(b)  $y = 8x + 30$

(d)  $y = (15/4)x + 38$

15. Hexagon ABCDEF is congruent to hexagon UVWXYZ.



Angle B is  $120^\circ$

Angle U is  $x^\circ$

Angle W is  $x^\circ - 25^\circ$

What is angle F?

(a)  $120^\circ$

(b)  $95^\circ$

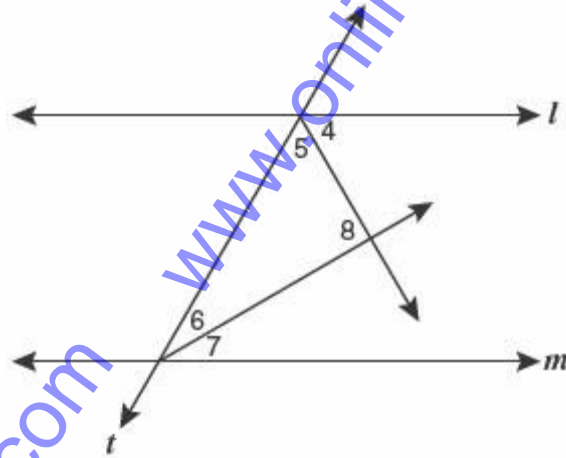
(c)  $240^\circ$

(d)  $8^\circ$

16. Parallel lines  $l$  and  $m$  are cut by transversal  $t$ .

$$\angle 4 = \angle 5$$

$$\angle 6 = \angle 7$$



What is measure of  $\angle 8$ ?

(a)  $120^\circ$

(c)  $65^\circ$

(b)  $90^\circ$

(d)  $45^\circ$

17. The Bulldog theater charges \$9.10 for adult tickets and \$7.75 for student tickets. Mrs. Williams purchased 7 tickets (some students and some adult) for \$56.95. Which system of equations could be used to find  $a$ , the number of adult tickets, and  $s$ , the number of students tickets Mrs. Williams purchased?

(a)  $a + s = 56.95$ ,  $7.75a + 9.10s = 7$

(b)  $a + s = 7$ ,  $9.10a + 7.75s = 56.95$

(c)  $a + s = 56.95$ ,  $9.10a + 7.75s = 56.95$

(d)  $a + s = 7$ ,  $7.75a + 9.10s = 56.95$

18. The following system of equations represents the profit margin of two major companies when  $x$  represents sales and  $y$  represents discounts to clients.

$$\begin{cases} 3x - 4y = 12 \\ x - 2y = 2 \end{cases}$$

Which of the following is the best approach to solving this system of equations?

- (a) Multiply the expression  $x-2y$  by 3 and add the first equation to the second equation
- (b) Substitute the expression  $2+2y$  for  $x$  in the first equation of the system.
- (c) Add the first equation to the second equation
- (d) Substitute the expression  $x-2y$  for  $x$  in the first equation of the system

19. 5 hockey pucks and three hockey sticks cost \$23. 5 hockey pucks and 1 hockey stick cost \$20. How much does 1 hockey puck cost?

(a) \$1.50

(c) \$3.50

(b) \$2.50

(d) \$4.50

20. This year, your brother Jack will be 2 years from being twice as old as your sister Jen. The sum of Jack's age and three times Jen's age is 66. How old is Jen?

(a) 10 years

(c) 12 years

(b) 11 years

(d) 13 years

21. Parents donated fudge for the fund raiser for your classroom. 40 pounds of chocolate fudge sold for \$2.15 per pound and vanilla fudge sold for \$1.90 per pound. Your class made \$158.20. How many pounds of fudge were sold?

(a) 77 pounds

(c) 79 pounds

(b) 78 pounds

(d) 80 pounds

22. One of your friends is heading north for a holiday and the other friend is heading south. If their destinies are 1029 miles apart and one car is traveling at 45 miles per hour and the other car is traveling at 53 miles per hour. How many hours before the two cars pass each other?

(a) 10.5 hours

(c) 11.5 hours

(b) 11 hours

(d) 12 hours

23. Dana needs 300 pickets for her colorful picket fence. She wants equal amounts of each of her 4 selected colors. She already has 32 red, 26 green, 9 yellow and no blue. How many more of each color does Dana need to buy? If the bulbs cost 25 cents and you get 20% off if you purchase 50 or more of the same color and 30% off if you purchase 60 or more of one color, how much does Dana need to spend? Show your work.

(a) She needs 75 blue, 66 yellow 49 green and 43 red. \$51.20

(b) She needs 66 blue, 75 yellow 49 green and 43 red. \$51.20

(c) She needs 75 blue, 49 yellow 66 green and 43 red. \$51.20

(d) She needs 49 blue, 66 yellow 75 green and 43 red. \$51.20

24. Two circles are touching each other externally. The radius of the first circle is 8 cm. And the distance between their centers is 16 cm. Find the radius of the second circle?

(a) 8

(c) 2

(b) 6

(d) 4

25. Find the value of "x", if  $x = 15!/14!$ .

(a) 14

(c) 16

(b) 15

(d) 17

26. The perimeter of the rectangular field is 220 m. And the ratio between its length and breadth is 8:3. What would be the area of the field?

(a)  $8400 \text{ m}^2$

(c)  $2400 \text{ m}^2$

(b)  $4200 \text{ m}^2$

(d)  $6400 \text{ m}^2$



27. The diagonals of a rhombus ABCD are 10 cm and 8 cm. What would be its area and length of a side.

(a) 6.403 cm

(c) 8.403 cm

(b) 10.403 cm

(d) 12.403 cm

28. Which one of the following ratios is the largest?

(a) 3:4

(c) 3:5

(b) 2:3

(d) 5:7

29. A can do a piece of work in 10 days and B can do the same work in 8 days. In how many days, they will do the same work together?

(a)  $29/9$  days

(c)  $40/9$  days

(b)  $30/9$  days

(d)  $50/9$  days

30. Three coins are tossed simultaneously. What is the probability for getting 3 heads?

(a)  $\frac{3}{8}$

(c)  $\frac{4}{7}$

(b)  $\frac{5}{7}$

(d)  $\frac{1}{8}$

31. In an interview, there are 15 candidates attended. Mr. Jack is one among them. What is the probability for Jack to be selected?

(a)  $\frac{1}{15}$

(c)  $\frac{1}{8}$

(b)  $\frac{1}{30}$

(d)  $\frac{1}{5}$

32. Solve the given system of linear equations.

$$x + y = 25$$

$$x - y = 1$$

(a) 13, 12

(c) 3, 2

(b) 10, 15

(d) 15, 10

33. Mr. John was assigned a work on a Monday. He completed the work after 75 days. On what day did he complete the work?

(a) Sunday

(c) Tuesday

(b) Thursday

(d) Saturday

34. Solve for "x" :  $4x \equiv 2 \pmod{3}$

(a) 3

(c) -6

(b) -4

(d) 7

35. The sum of three consecutive numbers is 99. What are the numbers.

(a) 34, 35, 36

(c) 32, 33, 34

(b) 30, 31, 32

(d) 33, 34, 35

36. A man buys some oranges at 3 for \$5 and sells them at 4 for \$6. Find his gain or loss percentage.

(a) 20% loss

(c) 20% gain

(b) 10% gain

(d) 10% loss

37. A number consists of two digits whose sum is 9. If 45 is added to the number, the digits are reversed. Find the number.

(a) 27

(c) 36

(b) 81

(d) 45

38. 40% of a number is 360. What is 25 % of the number?

(a) 215

(c) 225

(b) 125

(d) 175

39. The four angles of a quadrilateral are in the ratio of 2:3:5:8. Find the angles.

(a)  $40^\circ, 60^\circ, 100^\circ, 160^\circ$

(c)  $39^\circ, 60^\circ, 100^\circ, 161^\circ$

(b)  $40^\circ, 40^\circ, 120^\circ, 160^\circ$

(d)  $50^\circ, 60^\circ, 100^\circ, 150^\circ$

40. In a parallelogram ABCD,  $\angle B = (3x+10)^\circ$ ,  $\angle D = (4x-25)^\circ$ . Find the value of "x".

(a)  $35^\circ$

(c)  $45^\circ$

(b)  $55^\circ$

(d)  $65^\circ$

41. Two cubes of 6 cm each are placed side by side and a cupboard is formed. Find the surface area of the cupboard.

(a)  $750 \text{ cm}^2$

(c)  $360 \text{ cm}^2$

(b)  $546 \text{ cm}^2$

(d)  $420 \text{ cm}^2$

42. The volume of a cube is  $125 \text{ cm}^3$ . Find the total surface area.

(a)  $150 \text{ cm}^2$

(c)  $140 \text{ cm}^2$

(b)  $145 \text{ cm}^2$

(d)  $135 \text{ cm}^2$

43. Which of the following triplet is Pythagorean?

(a) (1, 2, 3)

(c) (3, 4, 5)

(b) (1, 1, 1)

(d) (4, 5, 6)

44. What is the smallest number by which 4116 must be multiplied to obtain a perfect cube?

(a) 21

(c) 26

(b) 16

(d) 18

45. How many digits are there in the square root of 4456321.

(a) 3

(c) 2

(b) 5

(d) 4

46. If  $a + b + c = 9$ , and  $ab + bc + ca = 23$ , find the value of  $a^2 + b^2 + c^2$ .

(a) 32

(c) 35

(b) 30

(d) 31

47. Find the mean of first ten prime numbers.

(a) 12.9

(c) 3.6

(b) 8.7

(d) 9.6

48. Find the simple interest on \$5500 at 5% per annum for 3 years.

(a) \$825

(c) \$330

(b) \$612

(d) \$240

49. In simple interest, a sum of money doubles itself in ten years. The number of years it would triple itself is

(a) 10

(c) 11

(b) 20

(d) 21

50. \$2000 is invested at annual rate of interest of 10%. What is the amount if compounding is done semiannually?

(a) 2568

(c) 2431

(b) 3431

(d) 1568



Answers

1. b	2. d	3. c	4. d	5. b	6. d
7. d	8. d	9. d	10. b	11. c	12. a
13. b	14. a	15. b	16. b	17. b	18. b
19. c	20. a	21. b	22. a	23. a	24. a
25. b	26. c	27. a	28. a	29. c	30. d
31. a	32. a	33. d	34. b	35. c	36. b
37. a	38. c	39. a	40. a	41. c	42. a
43. c	44. d	45. d	46. c	47. a	48. a
49. b	50. c				