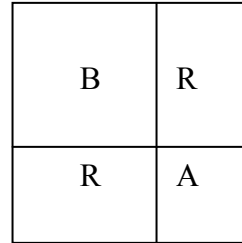


1. Which of the following must be true about an obtuse triangle?
 - a. All its interior angles are obtuse.
 - b. It has two acute angles.
 - c. It has exactly one acute angle.
 - d. It cannot be isosceles.
 - e. It cannot be scalene.

2. The figure shown is made of two squares, labeled A and B, and two congruent rectangles, labeled R. The area of square A is 9 square units and the area of square B is 16 square units. What is the sum of the areas of the two rectangles?

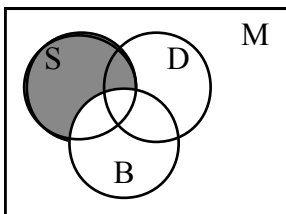
- a. 50 square units
- b. 49 square units
- c. 25 square units
- d. 28 square units
- e. 24 square units



3. Three boxes with lids are placed on a shelf. Three dimes and three quarters are placed in the three boxes so that there are two coins inside each box. The boxes are labeled 50¢, 35¢, and 20¢, but none of the boxes is labeled correctly. What is the minimum number of coins that you need to pull out, and from which box or boxes, if you intend to label all three boxes correctly?

- a. one coin from the box labeled 50¢
- b. one coin from the box labeled 35¢
- c. one coin from the box labeled 20¢
- d. one coin from the box labeled 20¢ and one coin from the box labeled 35¢
- e. one coin from each box

4. Let the universal set M = the set of all students enrolled at Middleton Middle School. Let S = the set of all seventh grade students at Middleton. Let D = the set of all students at Middleton who have a dog. Let B = the set of all students at Middleton who play in a basketball league. Which statement best describes the shaded section of the Venn diagram?



- a. The seventh-grade Middleton students who do not play basketball.
- b. The seventh-grade Middleton students who do not own a dog.
- c. The set of students at Middleton who are in the seventh grade and own a dog.
- d. The set of students at Middleton who are not in the seventh grade.
- e. The set of students at Middleton who own a dog and play basketball.

5. A machine has two slots for input. After you put some chips in slot 1 and some chips in slot 2, the machine gives you some chips as output. Here is a sample.

Slot 1 Input	Slot 2 Input	Output
4 red chips	1 red chip	3 red chips
4 red chips	1 blue chip	5 red chips
4 blue chips	1 blue chip	3 blue chips
1 blue chip	4 blue chips	3 red chips
1 blue chip	4 red chips	5 blue chips

Based upon the given information, what should be the output if 3 red chips are put in slot 1 and 5 blue chips are put into slot 2?

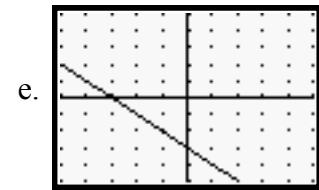
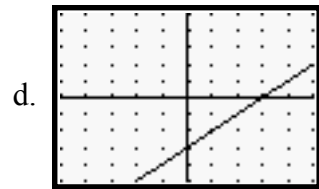
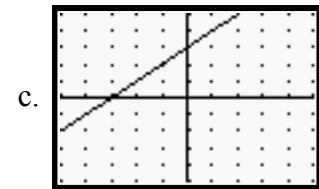
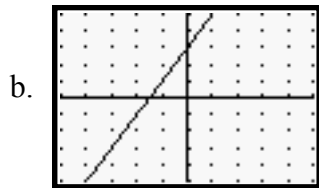
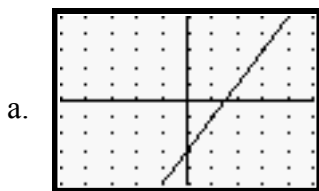
- 8 blue chips
 - 2 red chips
 - 8 red chips
 - 2 blue chips
 - 4 blue chips
6. If $x + y = 8$ and $x + z = 12$, which of the following statements must be true?
- $12 - z = 8 - y$
 - $y > z$
 - $y < x < z$
 - $x + y + z = 20$
 - $x + y = x + z + 4$
7. Austin received a birthday gift of money. He loaned \$5 to his friend Drew and spent half of the remaining money. The next day he received \$10 from his uncle. After spending \$9 at the movies, he still had \$11.00 left. How much money did he receive for his birthday?
- 5
 - 16
 - 23
 - 25
 - 35
8. $\sqrt{25} + \sqrt{125}$ is equal to which of the following?
- $\sqrt{150}$
 - $10\sqrt{5}$
 - 15
 - $5(1 + \sqrt{5})$
 - $10 + \sqrt{5}$

9. Bus A runs every 8 minutes, Bus B runs every 10 minutes, and Bus C runs every 12 minutes. If all three buses leave the station at 8:00 a.m., when is the next time all three buses leave the station at the same time?

- a. 9:00 am
- b. 10:00 am
- c. 11:00 am
- d. 12:00 pm
- e. 1:00 pm

X	Y
0	1
1	2
2	3
3	4
4	5
5	6
6	7
7	8
8	9
9	10

10. Which of the following graphs corresponds to the table shown here?



11. Minnie is holding a yardstick perpendicular to the ground. The shadow of the yardstick is 27 inches long. Minnie's shadow is 4 feet 6 inches long. How tall is Minnie?

- a. 5 feet tall
- b. 5 feet 6 inches tall
- c. 40.5 inches tall
- d. 60 inches tall
- e. 6 feet tall

12. A local warehouse-type store advertises that all its everyday prices are 60% off retail. During a sale, they advertise that sale prices will be 70% off retail. What percent discount is the store offering off its everyday price?

- a. 40%
- b. 35%
- c. 30%
- d. 25%
- e. 10%

13. The numbers 1, 2, 3, 4, 5, 6, 7, 8, and 9 are hidden behind the letters in the grid shown here. There is exactly one number behind each letter. No number is used more than once. The number at the end of each row is the product of the three hidden numbers in that row. The number at the bottom of each column is the product of the three hidden numbers in that column. If we know that the number behind D is 1, what statement **MUST** be true?

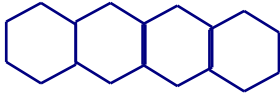
A	B	C	60
D	E	F	32
G	H	I	189
35	216	48	

- a. E is hiding 8.
 - b. A is hiding 5.
 - c. B is hiding 4.
 - d. I is hiding 6.
 - e. G is hiding 9.
14. The NBA states that the circumference of a regulation basketball must be between 29.5 inches and 30 inches. What is the greatest possible difference, rounded to the nearest thousandth, between the diameters of two regulation basketballs?
- a. 1.571 inches
 - b. 0.796 inches
 - c. 0.785 inches
 - d. 0.500 inches
 - e. 0.159 inches

15. There are 85 yards of fabric on a bolt. It takes $2\frac{7}{8}$ yards to make a jacket for a band uniform. As many jackets as possible are made from the fabric on the bolt. Which statement is true?
- There were $\frac{13}{23}$ yards left over.
 - There were 30 jackets made.
 - There were $1\frac{5}{8}$ yards leftover.
 - There were $29\frac{13}{23}$ yards of material used in all.
 - There were 244 jackets made.
16. The people attending a middle school basketball game could be classified into 4 distinct groups: adults, middle school girls, middle school boys, and children. (We are assuming every person is in exactly one of these groups.) Twenty percent of the people at the game were adults. There were twice as many middle school girls as middle school boys at the game. One twentieth of the people were children. There were 150 middle school girls at the game. How many children were at the game?
- 300 children
 - 5 children
 - 30 children
 - 45 children
 - 15 children
17. What digit is in the 10^{-20} place value position of the decimal representation of $\frac{1}{7}$?
- 1
 - 4
 - 2
 - 8
 - 5
18. What is the measure of the acute angle formed by the minute hand and the hour hand of a clock at 8:30?
- 60°
 - 65°
 - 70°
 - 75°
 - 80°

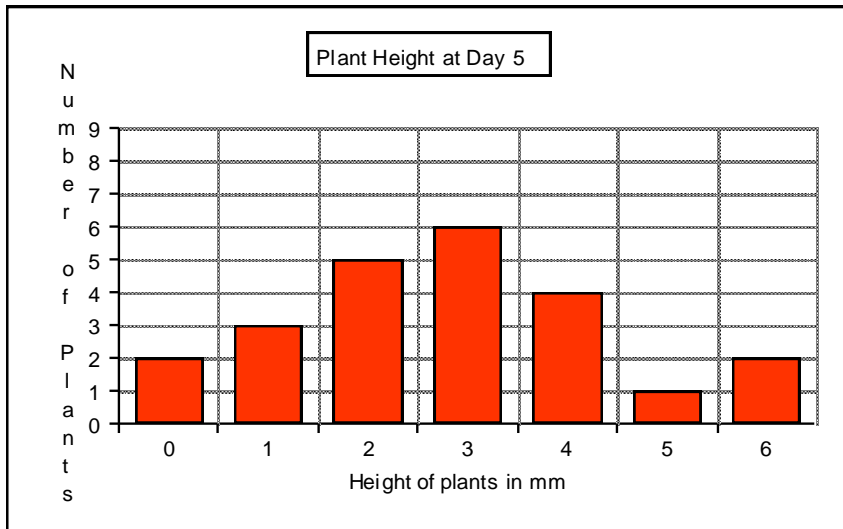
19. Which of the numbers below is a solution for $3(4 - x) < 8$?
- a. $\frac{4}{3}$
 - b. $-\frac{4}{3}$
 - c. 0
 - d. 1
 - e. 2
20. At a concession stand two burger platters and one hot dog platter cost a total of \$21. Two hot dog platters and one hamburger platter cost a total of \$18. How much would two hot dog platters and two hamburger platters cost?
- a. \$23
 - b. \$24
 - c. \$25
 - d. \$26
 - e. \$26.50
21. A room has a rectangular floor and ceiling, which are parallel to each other. The four walls are also rectangular. The area of the floor is 693 square feet. The area of one wall is 210 square feet. The area of another wall is 330 square feet. What is the volume of the room in cubic feet?
- a. 441 cubic feet
 - b. 6,930 cubic feet
 - c. 1,233 cubic feet
 - d. 1,089 cubic feet
 - e. 145,530 cubic feet
22. If 0.7 is 40% of a number, what would 25% of that number be?
- a. 0.4375
 - b. 0.07
 - c. 1.12
 - d. 1.35
 - e. 0.025

23. A series of regular hexagons with each side having a length of 1 are put together to form a “hexagon train.” A 4-hexagon train is shown here. Its perimeter is 18.



What would be the perimeter of a 1000-hexagon train?

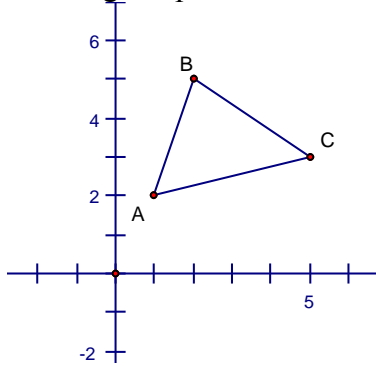
- a. 6000 units
 - b. 6002 units
 - c. 4000 units
 - d. 3002 units
 - e. 4002 units
24. Consider the information shown in the table.



What is the mean height, rounded to the nearest hundredth, of the plants on Day 5?

- a. 3.50
 - b. 3.00
 - c. 2.78
 - d. 2.50
 - e. 0.91
25. A trapezoid has an altitude of 4 cm. One base has a length of 6 cm. The area is 30 square centimeters. What is the length of the other base?
- a. 10 cm
 - b. 9 cm
 - c. 8 cm
 - d. 7 cm
 - e. 6 cm

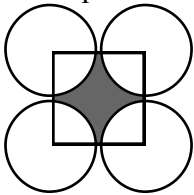
26. If the triangle shown below is reflected across the y -axis, what will be the location of the image of point A?



- a. $(-2, 1)$
 b. $(1, -2)$
 c. $(2, -1)$
 d. $(-1, 2)$
 e. $(-1, -2)$
27. There is a very famous sequence of numbers called Fibonacci Numbers. Here are the first eight: 1 1 2 3 5 8 13 21. What is the tenth Fibonacci number?

- a. 55
 b. 89
 c. 123
 d. 113
 e. 144

28. Four circles are arranged as shown. Each has a radius of 3 cm. Their centers are the vertices of a square. The area of the shaded region is closest to which of the following?



- a. 7.7 square centimeters
 b. 12.1 square centimeters
 c. 17.2 square centimeters
 d. 18 square centimeters
 e. 27 square centimeters

29. Which of the following sets of numbers could not be lengths of the sides of an isosceles triangle?
- a. 4 cm, 4 cm, 3 cm
 - b. 10 cm, 10 cm, 12 cm
 - c. 3 cm, 3 cm, 8 cm
 - d. 5 cm, 7 cm, 5 cm
 - e. 6 cm, 4 cm, 4 cm
30. A container has 1 gallon of water. One half of it is poured out. Next, one third of what remains is poured out. Finally, one fourth of what remains is poured out. How much water is left in the container?
- a. $\frac{1}{24}$ gallon
 - b. $\frac{1}{12}$ gallon
 - c. $\frac{1}{6}$ gallon
 - d. $\frac{1}{4}$ gallon
 - e. $\frac{1}{8}$ gallon