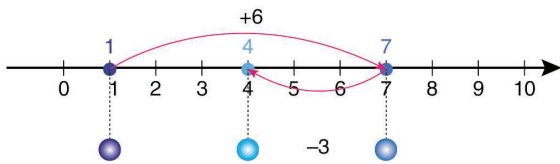Bruce sketched two rectangles on the grid plane as shown in the figure. What is the difference of the perimeters of the rectangles?
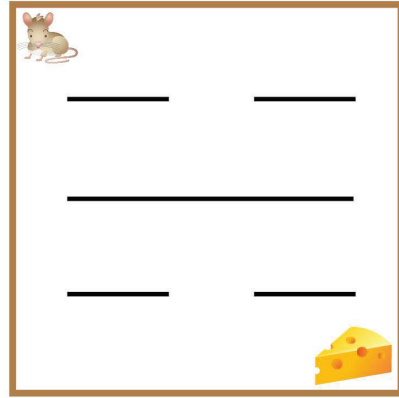
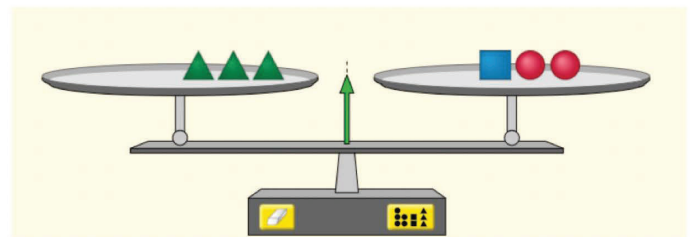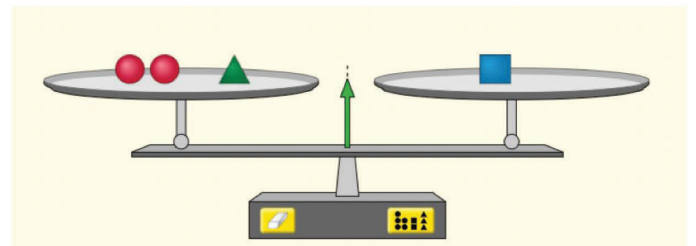A) 12   B) 8   C) 6   D) 4

Mouse

Cheese

A mouse wants to reach to the cheese as seen on the figure without stepping on the lines inside the room. In how many different paths can the mouse use to reach to the cheese?

A) 6   B) 8   C) 24   D) 12

Which of the following operations is modelled by the figure given above?

A) 1 + 6 - 3 = 4

B) 0 + 7 - 4 = 3

C) 1 + 4 = 7 - 3

D) 7 - 4 + 3 = 4

In the figure, both scales are at the balance. What is the relation between the weights of the objects?

A) 1 red = 4 blue = 2 green

B) 2 red = 3 blue = 4 green

C) 4 red = 1 blue = 2 green

D) 3 red = 2 blue = 1 green
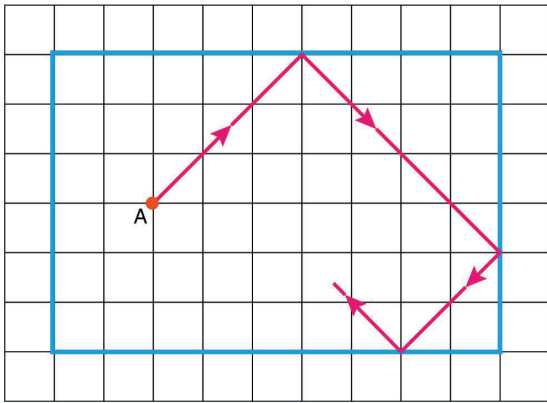
Figure 1

Figure 2

A billiard ball shot from the point A moves on the path with a constant speed as shown in the figure. After how many times hitting the walls of the table will the ball pass through the point A and follow the same direction?
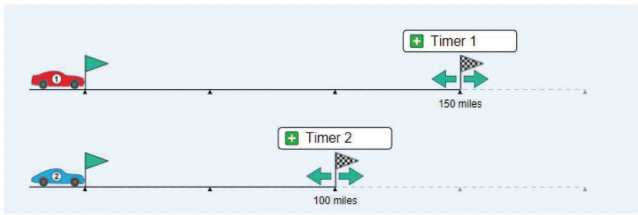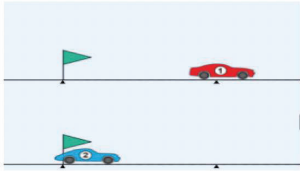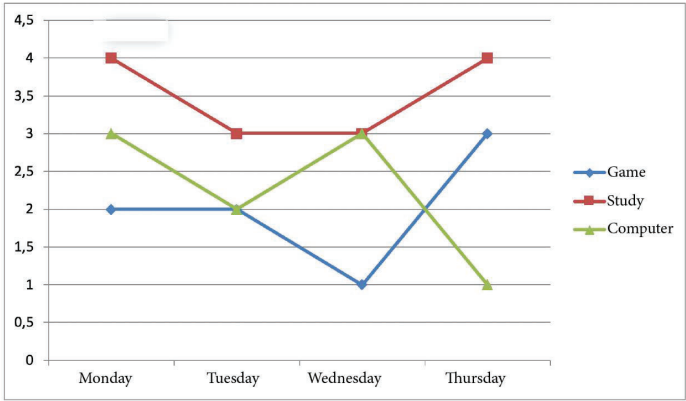
A) 5　　　　　　B) 6　　　　　　C) 9　　　　　　D) 10

As shown in the Figure 1, the first race car reaches to the finish line in 3 hours and second race car reaches to the finish line in 2.5 hours. If they start at the same time, what is the distance between the cars after 1.5 hours?

A) 40　　　　　　B) 35　　　　　　C) 25　　　　　　D) 15

Graph shows the time schedule of a student during his holiday. What should be the purpose of this graphing?

A) To see what is done during the holiday.

B) To compare the time spent on computer to the time spent on other games.

C) To see the change in the time spent to the games along the days.

D) To calculate the total time spent on computer during entire holiday.

$x+2y-5 = 0$

$y = 2x$

What is the common solution of the given equations?

A) (−1,2)　　　　　　B) (2,1)　　　　　　C) (1,2)　　　　　　D) (1,−2)

Zaza drives 40% of 600 km distance and takes a rest. Then, he takes 50% of the remaining distance. How many kilometers of the distance is left for Zaza to finish the entire trip?

A) 420 km   B) 60 km   C) 180 km   D) 120 km
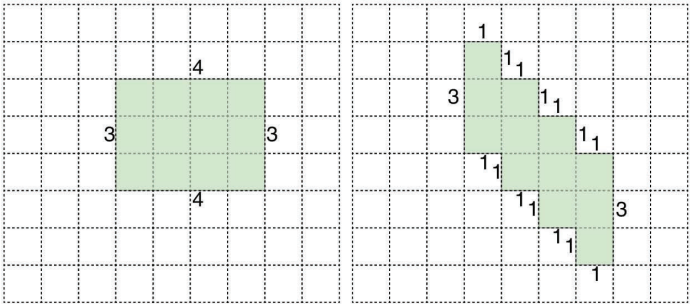
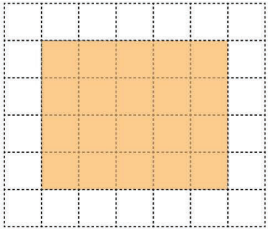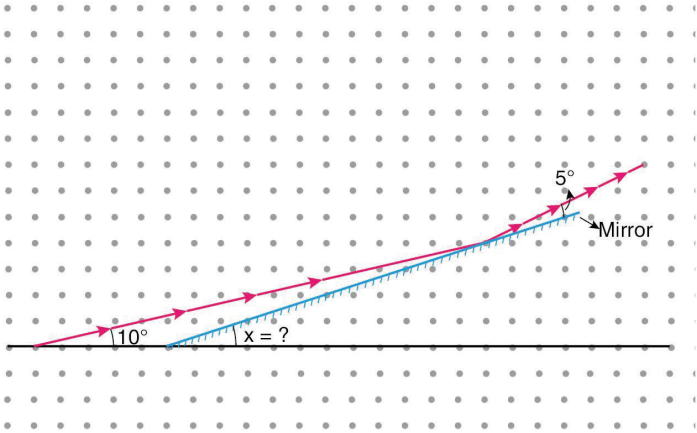Figure 1 (3*4)   Figure 2

Figure 3 (4*5)

Each column in the Figure one is moved 1 unit downward and the shape in the Figure 2 is obtained. If the same operation is applied to the shape in the Figure 3, what will happen to the perimeter of the shape?

A) stays unchanged   B) increases 6 units

C) increases 4 units   D) increases 8 units

A light beam reflected from the ground at 10° angle also reflects from the mirror at 5° angle. If the angle of incident ray and reflected ray have equal angles from the mirror, then what is the measure of x?

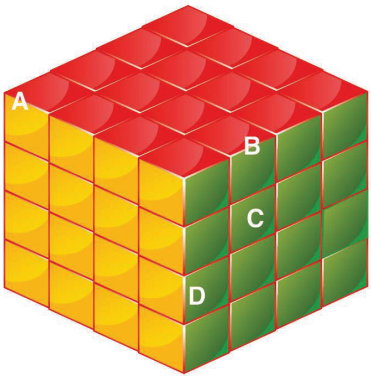A) 5°   B) 10°   C) 15°   D) 20°
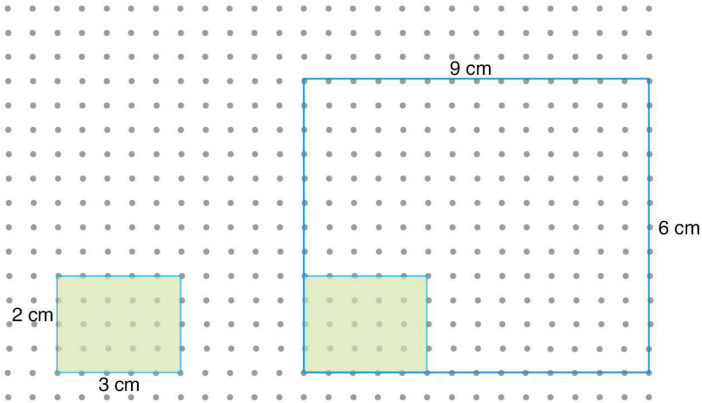
Small rectangles with the length 3 cm and the width 2 cm will be placed inside a larger rectangle with the length 9 cm and the width 6 cm. At most, how many identical small rectangles can fit inside the larger rectangle?

A) 6   B) 9   C) 8   D) 12
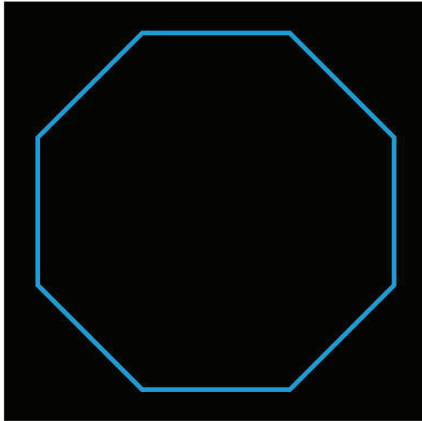
In how many different lines can be drawn dividing the regular octagon into two congruent parts?

A) 16   B) 9   C) 8   D) 4

Which cube does not change the total surface area of the structure when it is taken off from the structure?

A) D   B) A   C) C   D) B

The speed of the bird flying towards the rock is 78 meters per second. The bird makes a sound. If the sound hits the rock and returns to the bird in 6 seconds, what is the distance of the bird to the rock at that moment it made the sound?

(Speed of sound 340 meters per second.)

A) 2508 m   B) 398 m   C) 1572 m   D) 1254 m

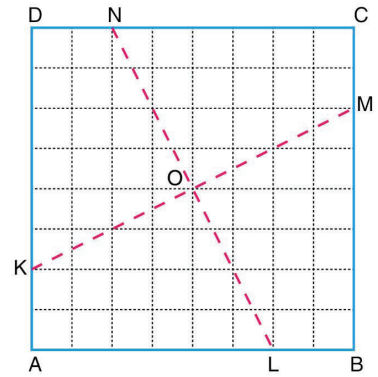**A $200 cost item is discounted 42% mistakenly instead of intended 24% discount. What is the extra discount of the seller in dollars?**

A) $36   B) $18   C) $84   D) $48
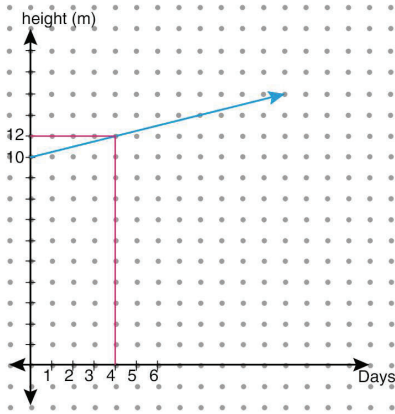
Emilia keeps a record of the height of his flower every day. In which day will the height of the flower be 18 cm?

A) 7　　　　　B) 16　　　　　C) 8　　　　　D) 18

Area of (ABCD) is 6400 m^2

A farmer divides his square-shaped land into 4 equal areas as shown in the figure. What is the distance between the point O and the vertex C?
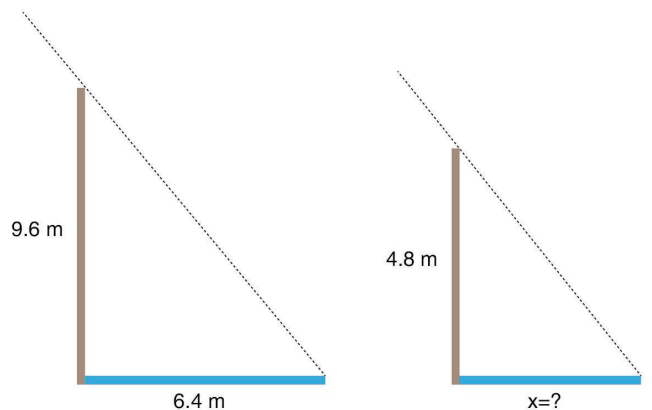
A) 8　　　　B) $16\sqrt{2}$　　　　C) 40　　　　D) $40\sqrt{2}$

| Duration	Number of Bacteria
1 hour	2
2 hours	4
3 hours	8
4 hours	16
5 hours	32

The table shows increase in bacteria population in an experiment. If the number of bacteria doubles every 2 hours, then what is the difference between the numbers of bacteria population in 11th hour and 4th four?

A) 128　　　　　B) 256　　　　　C) 1012　　　　　D) 2032

A pole 9.6 meters tall casts a shadow 6.4 meters. How long does a pole 4.8 meters tall cast a shadow at the same time?

A) 3.2　　　　　B) 4.8　　　　　C) 2.4　　　　　D) 5.4
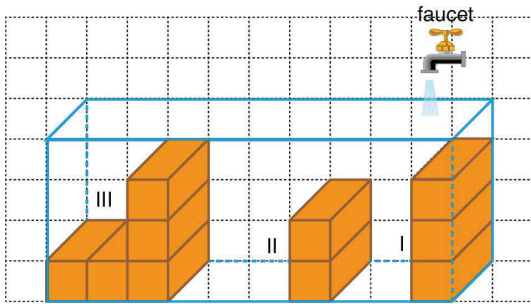
Inside a rectangular prism tank bricks are located as shown in the figure. Water fills first the part I, then the part II, and then the part III. If it takes 8 minutes to fill the part I, after how many minutes will the water reach to the part III?

A) 16 B) 64 C) 32 D) 28
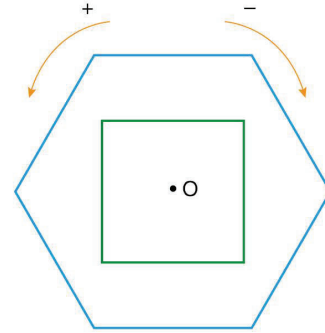
A regular hexagon and a square share a common center point as shown in the figure. Which of the following rotations will keep the same original position?

A) If the square is rotated 45° clockwise.

B) If the hexagon is rotated 45° counterclockwise.

C) If the square is rotated 60° clockwise and the hexagon is rotated 30° counterclockwise.

D) If the square is rotated 270° counterclockwise and the hexagon is rotated 120° counterclockwise.

The creatures under the sea are seen closer to the surface of the water approximately 1/3 of their true-depth due to the light refraction.
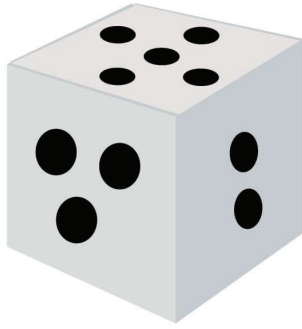
Terasa sees the fish x meters away from herself in the first picture and y meters away in the second picture. Find x – y.
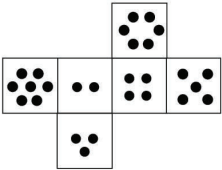
A) 41 meter B) 20 meter

C) 34 meter D) 27 meter

Every letter in the word STEM represents the digits 1, 4, 7, or 9. If the STEM is the smallest even number divisible by 3, then which number is E?
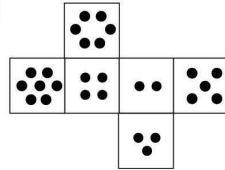
A) 1 B) 4 C) 7 D) 9

Hans puts black circles on the unfolded form of a cube so that the sum of the dots on the opposite sides is 9. When folded the cube is seen as in the picture. Which of the following is the unfolded form of the cube?
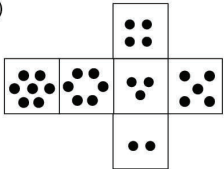
A)

B)

C)

D)