Sample questions 6th grade and advanced questions

Focus on difference

When Lily walks at her regular speed, she can walk 5 km within a certain time range. In order to walk 6 km within the same time range, she must walk 25 m per minute faster than her normal speed.

How fast does Lily normally walk?

Answer: _____ m/min.

There are pencils and notebooks to be distributed to students. The number of pencils is 4 times the number of notebooks. If 5 pencils and two notebooks are distributed to each student, 10 pencils would be left over and 20 more notebooks would be needed.

How many students are there?

Answer: _____

Cranes and turtles pattern

There are two seating areas in a baseball stadium: area A and area S. On the first day 36,000 people came to the stadium. On the second day 1/12 more people sat in area S and 1/15 fewer people sat in area A than on day one. The total number of people that came to the stadium on day two was 34,500.

How many people sat in area A on the second day?

Answer: _____ people

Newton's pattern

At the entrance to a movie theater, there is a line of people waiting to enter. Every minute, 30 more people join the line. If there were 3 entrances, the line would be gone in 12 minutes after opening of the thearter. If there were 7 entrances, the line would be gone after 4 minutes.

How many people can go inside the theater every minute through one entrance?

Answer: _____ people

How many people were in the line before the theater opened?

Answer: _____ people

Planting trees pattern

There are 245 flags on a running course, with a distance of 20 m in between them. There is 20 m between the starting line and the first flag, as well as 20 m between the last flag and the finish line.

What is the length of this running course? (in meters)

Answer: _____ m

Age calculation

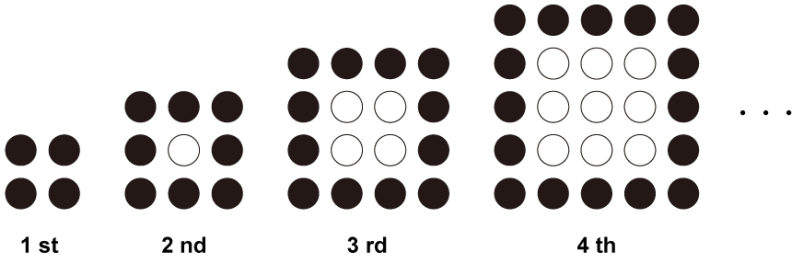
Taylor was born when her mother was 21 years old. When her mother's age was four times Taylor's age, her father was 30 years old. Today, the sum of Taylor's and her parents' age is 128.

How old is Taylor today?

Answer: _____ year(s) old

Square formation

There are black and white balls in a square formation as shown below. In the 12th formation, how many more white balls than black balls are there?



Answer: _____ balls

Ratio

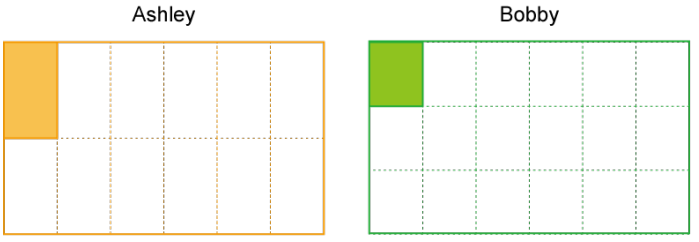
Student A, B, and C divided $443.50 among themselves. Student A received $5 more than 3/4 of the amount of money that student B received, and student B received $2 more than 3/2 of the amount of money that student C received.

How much money did student A receive?

Workload pattern

In order to complete the task, Ashley takes 12 days, while Bobby takes 18 days.
For the first 6 days they worked together, then Ashley completed the rest.

From beginning to end, how many days will it take to complete the task in this way?



Answer: ☐ days

Nature of number

There is a circle with 8 points on its circumference. If you connect any 3 of these points, you can make a triangle. How many different triangles can you make?

Answer: ☐ triangles

What is the number that goes into ☐?

When 3 is multiplied 333 times, the one's place is ☐.

Answer: ☐

Regularity

When a number is multiplied by itself three times, the answer is equal to a sum of a series of odd numbers. For example,

2 x 2 x 2 = 3 + 5
3 x 3 x 3 = 7 + 9 + 11
4 x 4 x 4 = 13 + 15 + 17 + 19

What is the smallest number within a series of odd numbers whose sum is equal to 7 x 7 x 7?

Answer: ☐

Geometry

Figure 1 is a rectangle, and its diagonal line is 5 cm long while its sides are 3 cm, and 4 cm. The rectangle is folded on line AB, and folded again to overlap Point A and B to make a quadrilateral like the one in Figure 2.

How many times larger is the area of the quadrilateral than that of the rectangle?

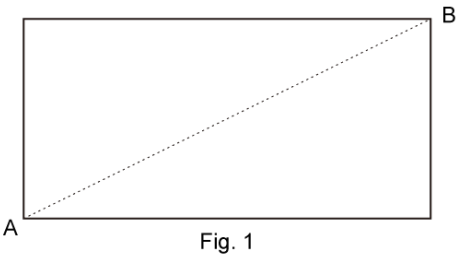


Fig. 1

Answer: ☐/☐

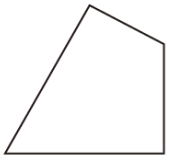
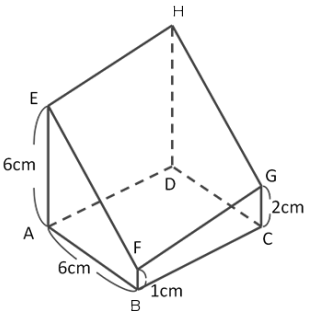


Fig. 2

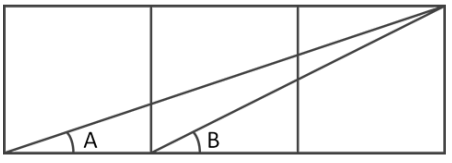
The following diagram shows an object that was produced by cutting a prism in a plane.
The shape ABCD is a rhombus with a side of 6 cm and the area is 30 **cm²**.

1. Find the length of DH. Answer: ☐ cm

2. Find the volume of ABCDEFG.
Answer: ☐ cm^3



There are 3 squares and 2 diagonal lines.
Find the sum of angle A and angle B.
(This is a super difficult question.)



Answer: ☐ degrees