

# Grade 6

Assessment of Reading, Writing and Mathematics, Junior Division

## Student Booklet

# Mathematics

SPRING 2011

**RELEASED ASSESSMENT QUESTIONS**

Record your answers on the Multiple-Choice  
Answer Sheet.

Education Quality and  
Accountability Office



Please note: The format of  
this booklet is different from  
that used for the assessment.  
The questions themselves  
remain the same.

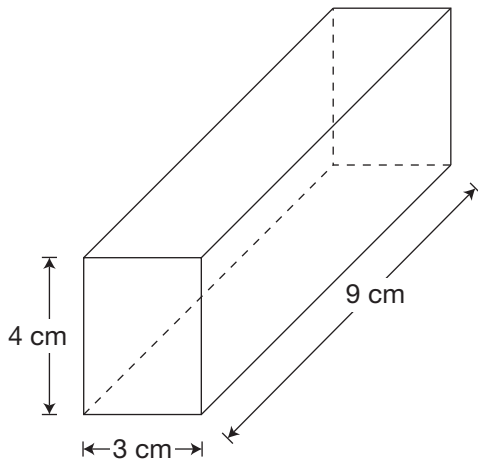
**1** Consider the pattern below.

7, 14, 28, 56, \_\_\_\_, 224

What is the missing term in this pattern?

- a 84
- b 102
- c 112
- d 168

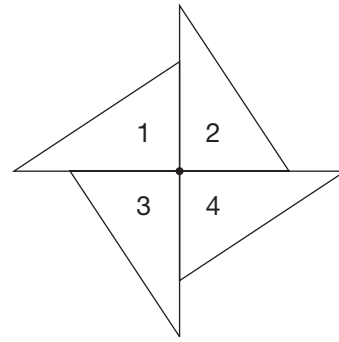
**2** Jacob paints the outside of the rectangular prism below, except for the bottom.



What is the total area that he paints?

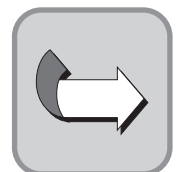
- a  $108 \text{ cm}^2$
- b  $123 \text{ cm}^2$
- c  $132 \text{ cm}^2$
- d  $150 \text{ cm}^2$

**3** Look at Triangle 2 in the following design.

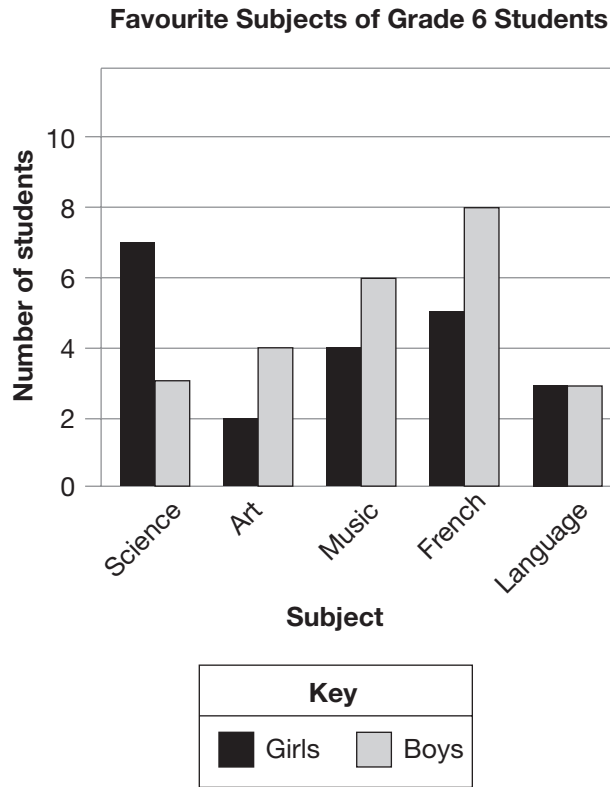


Which triangle shows Triangle 2 after a rotation of  $180^\circ$  about the centre point?

- a Triangle 1
- b Triangle 2
- c Triangle 3
- d Triangle 4



- 4** The following graph shows the favourite subjects of some Grade 6 students.



Based on the data in the graph, which of the following statements is true?

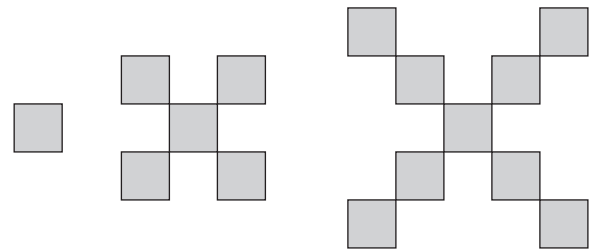
- a Most boys chose science as their favourite subject.
- b Science is the least favourite subject of these students.
- c French is the favourite subject of twice as many students as music.
- d Twice as many girls chose music as chose art as their favourite subject.

- 5** Every week, Danny eats 540 grams of cereal. Over 8 weeks, he finishes a total of 12 boxes of cereal. Each box contains the same amount of cereal.

How many grams of cereal are in each box?

- a 360
- b 810
- c 4320
- d 6480

- 6** Manny uses tiles to build the geometric pattern shown below.



**Stage 1      Stage 2      Stage 3**

Which of the following represents the number of squares in Stages 4, 5 and 6 of Manny's pattern?

- a 17, 24, 31
- b 13, 17, 24
- c 13, 17, 21
- d 12, 16, 20

**7** The table below shows the changes in the amount of snow on the ground over 10 days.

Ali estimates that the total change is an increase of 30 cm.

Nadia estimates that the total change is an increase of 25 cm.

Day	Change
1	15 cm new snow
2	7.5 cm new snow
3	no change
4	4.5 cm melted
5	3.5 cm melted
6	4 cm melted
7	no change
8	12 cm new snow
9	2.5 cm new snow
10	8 cm new snow

Which student makes a more accurate estimate?

Circle one:    Ali            Nadia

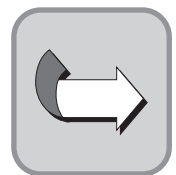
Justify your answer.

- 8** Consider how 30 is written below as the product of prime numbers.

$$30 = 2 \times 3 \times 5$$

Write 168 as the product of prime numbers.

Show your work.



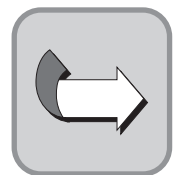
**9** Dakota and Bryan count their coloured paper clips and record the results in the table below.

Colour	Dakota	Bryan
Red	14	18
Yellow	7	9
Blue	6	5
White	17	20

They put all of the paper clips in a box. Dakota chooses one paper clip from the box without looking.

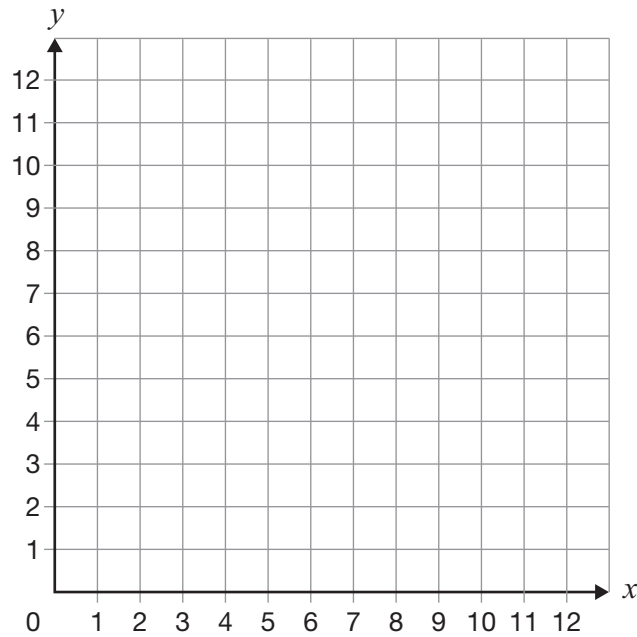
Determine the probability that Dakota chooses a red paper clip.

Show your work.



**10** Liam creates a shape using the ordered pairs A(1, 4), B(1, 8), C(4, 8) and D(6, 4).

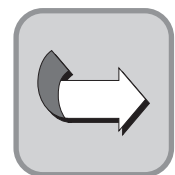
Draw Liam's shape on the grid below.



Draw a shape on the grid that is congruent to Liam's. Start with the ordered pairs E(7, 6) and F(7, 1).

Write the coordinates of your shape's other 2 vertices.

(\_\_\_\_,\_\_\_\_) (\_\_\_\_,\_\_\_\_)



- 11** Consider the line segment below.

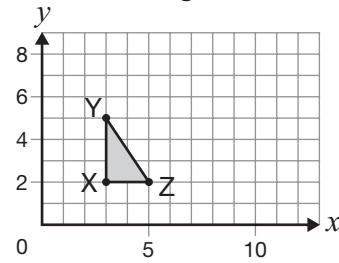


Which of the following is closest to its length?

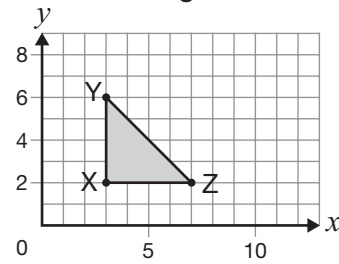
- a 3.7 cm
  - b 4.2 cm
  - c 47 mm
  - d 57 mm
- 12** What is the mean of a set of data?
- a the value that occurs most often
  - b the middle value when the set is arranged in order
  - c the difference between the largest and the smallest values
  - d the result of adding all the values and dividing by the number of values

- 13** The following graphs show the pattern for a triangle that grows in size.

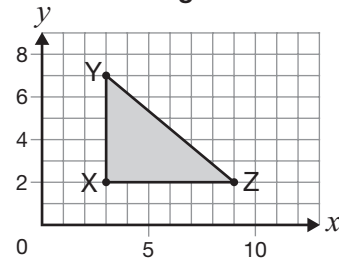
**Triangle 1**



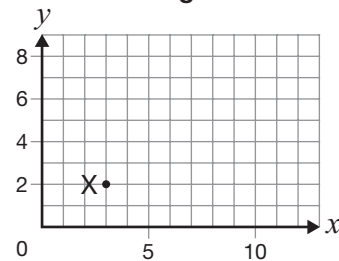
**Triangle 2**



**Triangle 3**



**Triangle 4**



If the pattern continues, what will be the coordinates of Y and Z for Triangle 4?

- a Y(8, 3) Z(2, 10)
- b Y(3, 8) Z(10, 2)
- c Y(3, 8) Z(11, 2)
- d Y(8, 3) Z(2, 11)



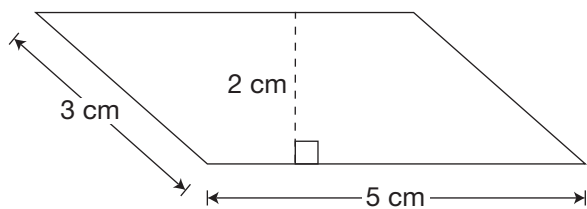
- 14** Consider the equation below.

$$5 \times n + 12 = 32$$

What is the value of  $n$  in this equation?

- a 3
- b 4
- c 15
- d 17

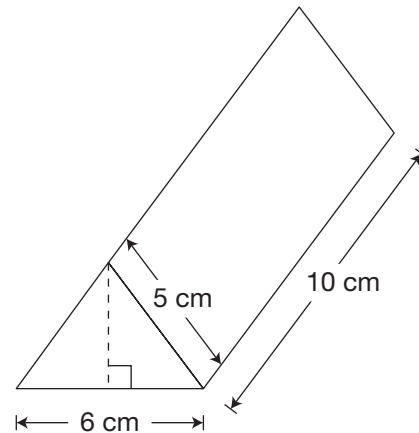
- 15** Consider the parallelogram below.



Which expression can be used to find the area, in square centimetres, of this parallelogram?

- a  $5 \times 2$
- b  $5 \times 3$
- c  $2 + 3 + 5$
- d  $3 + 5 + 3 + 5$

- 16** The measurements of a triangular prism are shown below in centimetres.

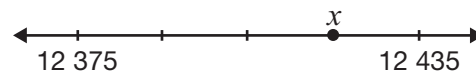


One face has an area of  $12 \text{ cm}^2$ . Another face has an area of  $60 \text{ cm}^2$ .

What are the areas, in  $\text{cm}^2$ , of the remaining 3 faces?

- a 12, 12, 50
- b 12, 12, 60
- c 12, 50, 50
- d 12, 60, 60

- 17** Consider the number line below.



What value does  $x$  represent?

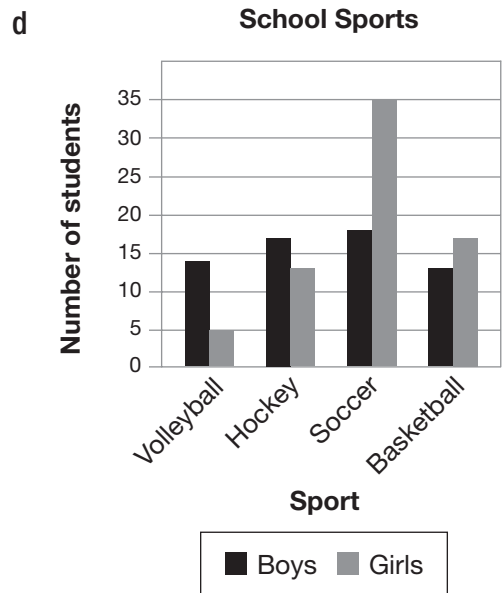
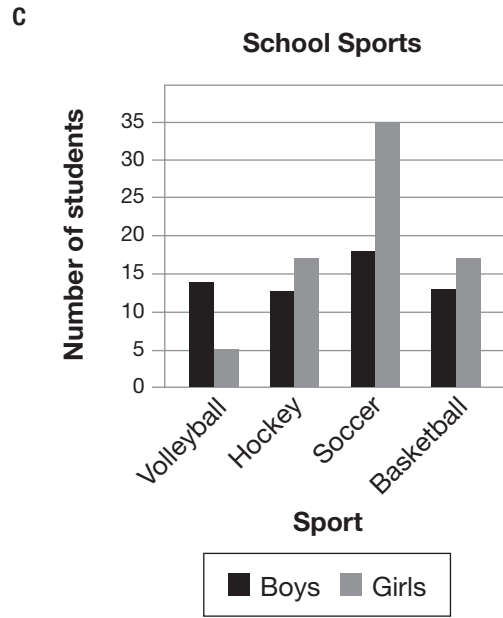
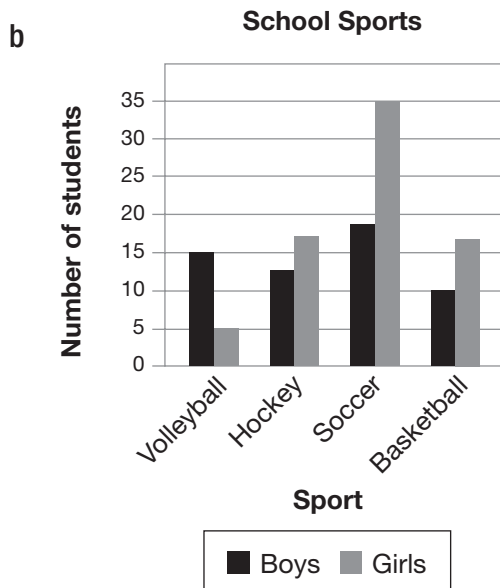
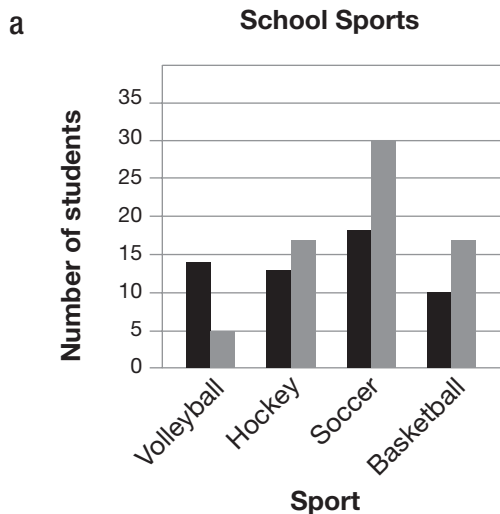
- a 12 415
- b 12 420
- c 12 425
- d 12 430

**18** The table below shows data about participating in school sports.

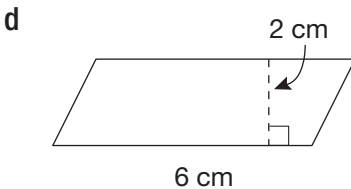
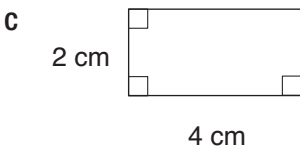
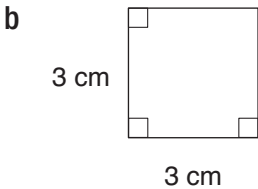
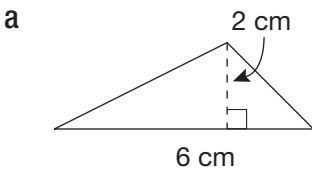
**School Sports**

Sport	Number of boys	Number of girls
Volleyball	14	5
Hockey	13	17
Soccer	18	35
Basketball	13	17

Which graph represents this data?



**19** Which shape below has an area of  $12 \text{ cm}^2$ ?



**20** A company made 1 000 000 balloons last month and packaged them in bags containing 100 balloons. Each bag of balloons sells for \$2.

How much money will the company receive if the company sells all of the bags?

- a** \$200
- b** \$2000
- c** \$20 000
- d** \$200 000

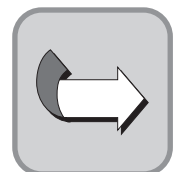
**21** Derek makes a number cube. The theoretical probability of rolling a multiple of 3 on his number cube is  $\frac{5}{6}$ .

Which set of numbers could be on the faces of Derek's number cube?

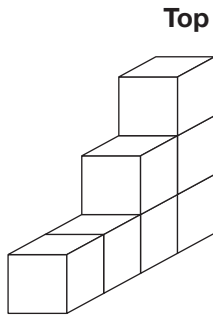
- a** 1, 2, 3, 4, 5, 6
- b** 1, 3, 3, 6, 6, 6
- c** 3, 3, 3, 3, 3, 3
- d** 3, 5, 5, 5, 5, 5

**22** If  $6 \times a = 12$  and  $6 \times a - b = 8$ , what is the value of  $b$ ?

- a** 2
- b** 4
- c** 6
- d** 8



- 23** The three-dimensional figure below was built using cubes.



What is the top view of this figure?

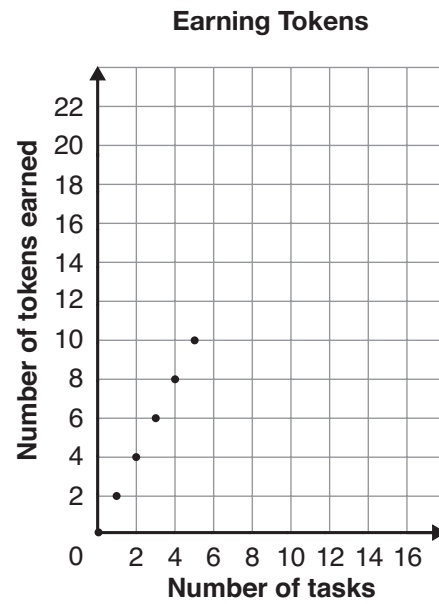
- a
- b
- c
- d

- 24** Ming makes 4.8 litres of lemonade.

How many millilitres does she make?

- a 0.048
- b 0.48
- c 480
- d 4800

- 25** The graph below shows a relationship between the number of tasks Cole completes and the number of tokens he earns.



According to the pattern shown on the graph, how many tasks must Cole complete to earn 16 tokens?

- a 6
- b 8
- c 16
- d 32

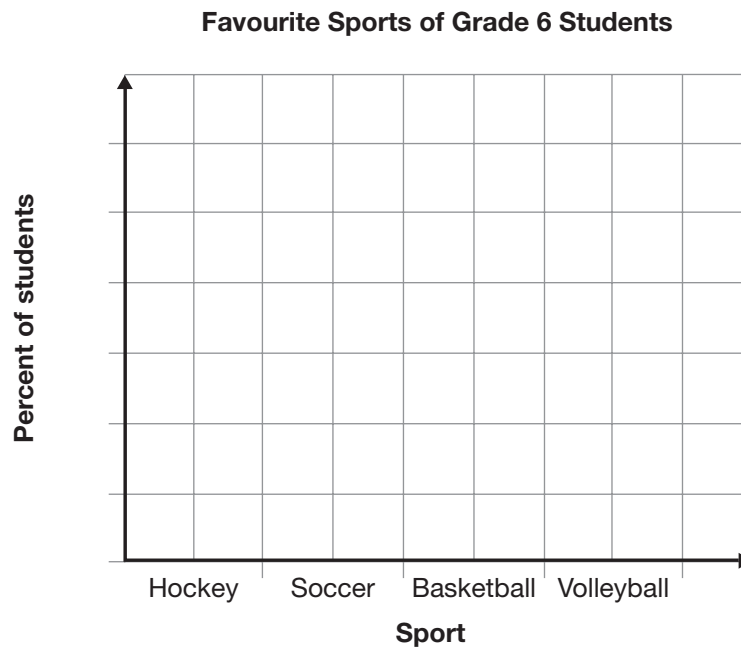
**26** Some Grade 6 students participate in a survey about their favourite sports.

The results are shown in the table below.

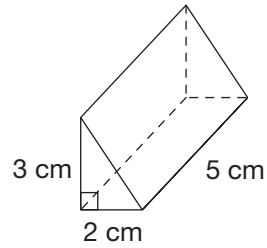
Complete the table.

Sport	Number of students	Percent of students
Hockey	22	
Soccer	11	
Basketball	14	
Volleyball	3	

Complete the graph below using the percents.

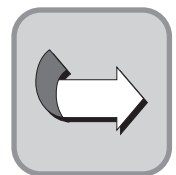


- 27** Jackie fills the triangular prism pictured below with water. Then she empties the water into a rectangular prism.



Determine the number of times that Jackie must fill the triangular prism with water to fill a rectangular prism that is 10 cm long, 2 cm wide and 12 cm high.

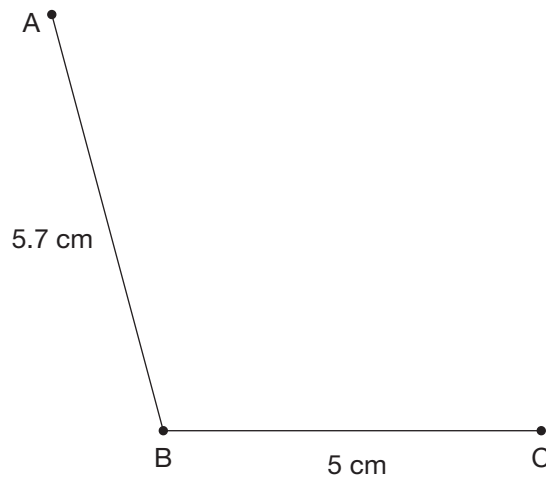
Justify your answer.



**28** Use the line segments AB and BC below to construct pentagon ABCDE with the following properties:

- a right angle at point C
- an angle that measures  $110^\circ$  at point A
- a side of 4.7 cm

Label all angles and sides with their measures.



**29** Karen and Riley create the shrinking patterns shown below.

**Karen's Pattern**

Term number	Term
1	1024
2	512
3	256

**Riley's Pattern**

Term number	Term
1	111
2	99
3	87

What are their pattern rules?

Karen's rule:

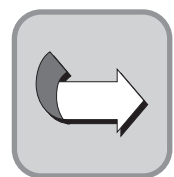
\_\_\_\_\_.

Riley's rule:

\_\_\_\_\_.

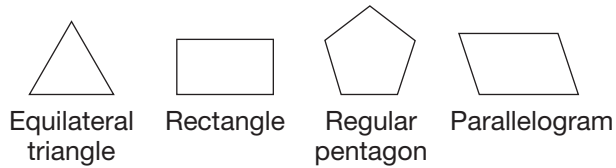
Which pattern will be the first to reach a term smaller than 10?

Justify your answer.





- 30** Consider the shapes below.



Which list shows the shapes in order from fewest to most lines of symmetry?

- a**
- 
- b**
- 
- c**
- 
- d**
- 

- 31** Consider the equation below.

$$3 \times m + 2 \times n = 36$$

Which values of  $m$  and  $n$  would **not** make the equation true?

- a**  $m = 2, n = 15$   
**b**  $m = 4, n = 12$   
**c**  $m = 6, n = 9$   
**d**  $m = 8, n = 7$

- 32** A fair number cube with 1, 2, 3, 4, 5 and 6 on its faces is rolled once.

The dot on the number line below represents the probability of an event.



Which event could be represented by this dot?

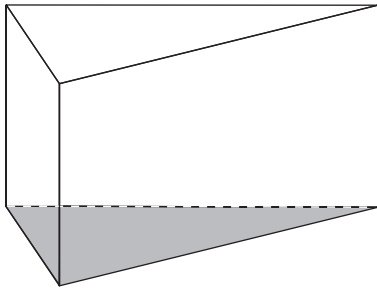
- a** rolling an odd number  
**b** rolling an even number  
**c** rolling a number larger than 2  
**d** rolling a number smaller than 3
- 33** The amounts of water in two containers are shown in the table below.

Container	Amount of water (L)
A	0.967
B	1.02

What is the difference between the amounts of water in the containers?

- a** 0.053 L  
**b** 0.865 L  
**c** 1.947 L  
**d** 1.987 L

- 34** Consider the triangular prism pictured below.



The area of the triangular base is  $36 \text{ cm}^2$ . The volume of the triangular prism is  $396 \text{ cm}^3$ .

What is the height of the triangular prism?

- a 6 cm
  - b 9 cm
  - c 11 cm
  - d 12 cm
- 35** A recipe for a fruit drink uses 1 litre of cranberry juice, 2 litres of grape juice and 3 litres of orange juice.
- Which of the following could be represented by the ratio 3:2?
- a grape juice to orange juice
  - b orange juice to grape juice
  - c grape juice to cranberry juice
  - d cranberry juice to grape juice
- 36** A number is multiplied by 0.01 to get a product of 23.6.

What is the number?

- a 0.0236
- b 0.236
- c 2360
- d 23 600

