

Year 9 NUMERACY

Non-calculator

Test 1 Annotated

INSTRUCTIONS TO STUDENTS



Use a 2B pencil to show your answers.

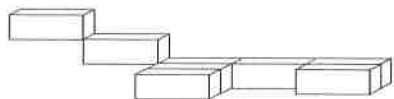


For the multiple-choice questions, show your answer by shading the matching bubble. If you make a mistake, erase the shading and shade the correct bubble.



For the other questions, write your answer in the box provided. If you make a mistake, erase it and write the correct answer.

1 The shape below is made using 8 rectangular bricks.

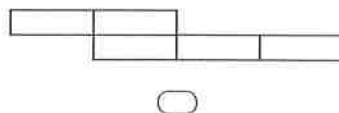
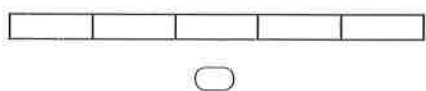
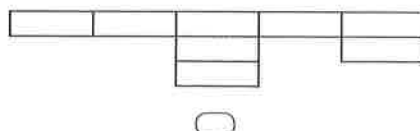
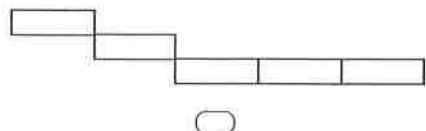


HINT

The view will be two dimensional.
Picture the shape of the top of the bricks.



Which one of the following shows the top view of the shape?



2 Cards marked from 1 to 10 are shuffled and placed face down on a table.
One card is selected.

What is the chance that the card selected is marked with a number less than 4?

0.1

0.3

0.4

0.7

TRAP

Remember that less than 4 means that 4 is not included.

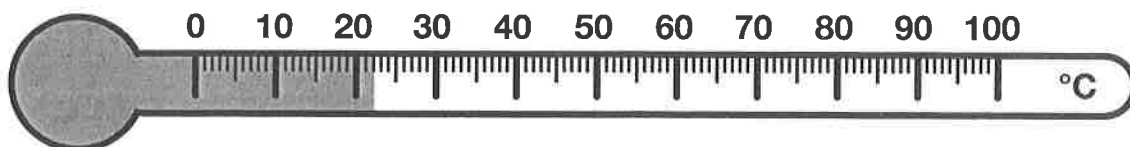
THINGS TO KNOW

Chance = number of favourable outcomes divided by the total number of possible outcomes.

3 The thermometer shows the temperature at 9 am.

TRAP

Check the scale carefully.



What was the temperature at 9 am?

20°C

22°C

23°C

24°C

- 4 45% of the shots in a netball game missed the goals.
18 shots missed the goals.
How many shots at goal were there altogether?

HINT

Work out how many shots at goal make up 100%.

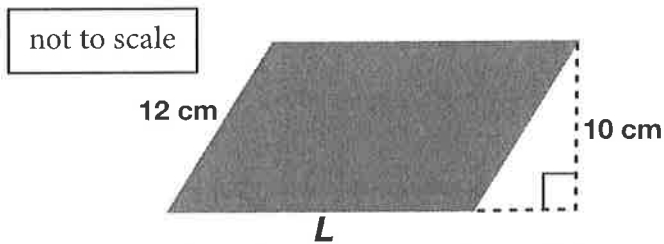


- 5 Shauna thought of a number.
She added 5 then multiplied by 2.
The answer was 24.
What was the number Shauna thought of?

TIP

Remember to 'undo' operations in the reverse order.

- 6 The area of the shaded parallelogram is 180 cm^2 .



What is the length of the shaded parallelogram?

 cm

TRAP

Think about whether you need the perpendicular height or the length of the sloping side.

THINGS TO KNOW

Area of a parallelogram = length multiplied by the perpendicular height.

- 7 $50 - 40 \times 20 + 10$ could be used as a best estimate for which one of the following?

- $52 - 47 \times 21 + 4$
 $51 - 43 \times 21 + 13$
 $47 - 47 \times 26 + 15$
 $49 - 42 \times 13 + 5$

HINT

This is a question about rounding up and rounding down.



8 In a game, the rules are as follows:

A **goal** is worth 6 points.
A **behind** is worth 1 point.

TIP

First find the points value of the goals in terms of g .



My team scored g goals and b behinds.

Which one of the following gives the total points my team scored?

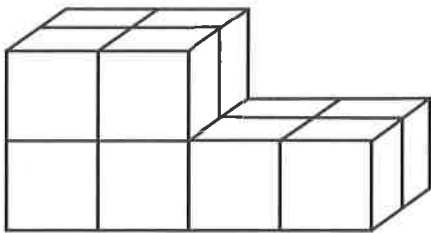
$g + 6b$

$6g + b$

$6(g - b)$

$6(g + b)$

9 This solid shape is formed using cubes of side 1 cm.



HINT

First, look at the number of cubes in the object.

The number of cubes that need to be added to make a rectangular prism containing 16 cubes is:

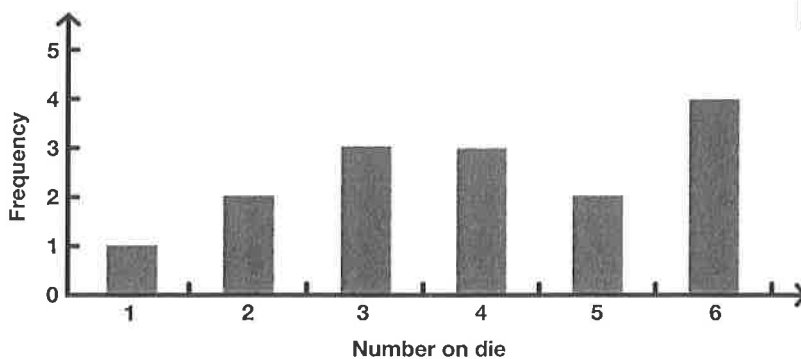
4

8

12

16

10 Sam rolled a die 15 times and recorded the results.



HINT

Check how many 5s were rolled out of the total possible results.

The results are shown in the column chart.

What was the chance that Sam rolled a 5?

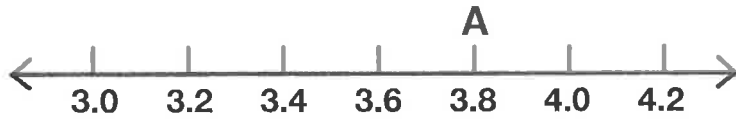
$\frac{1}{15}$

$\frac{2}{15}$

$\frac{1}{6}$

$\frac{1}{5}$

11



The point marked A has the value:

$\sqrt{12}$

$\frac{19}{5}$

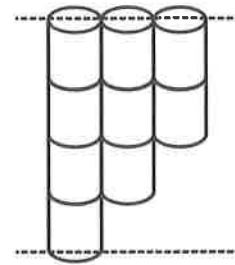
$3\frac{1}{8}$

$3\frac{3}{4}$

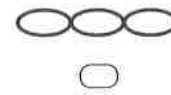
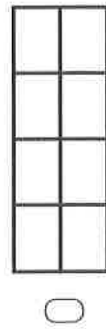
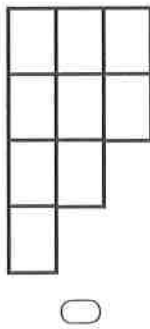
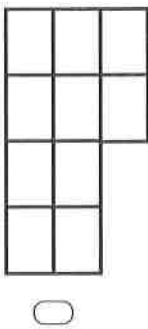
HINT

For $\sqrt{12}$, is 12 nearer to 9 or 16? For the other numbers, find the decimal values.

- 12 The object shown is made from 9 identical cylinders. A vertical slice is made right through the object.



Which diagram below shows the shape of the cross-section made by the slice?



TIP

Think about what you see when you look at the front-on view of the object.

- 13 Which of the following expressions is equivalent to $3(2m - 5)$?

$2m - 15$

$3m - 15$

$6m - 15$

$6m - 5$

HINT

Multiply out the bracket using the distributive law.

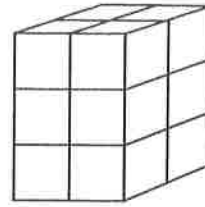
THINGS TO KNOW

Distributive law: $a(b + c) = ab + ac$

14 Pam put all her 12 blocks into a pile as shown.

Penny grabbed some of them, leaving Pam with only $\frac{3}{4}$ of her blocks.

How many blocks did Pam have left?



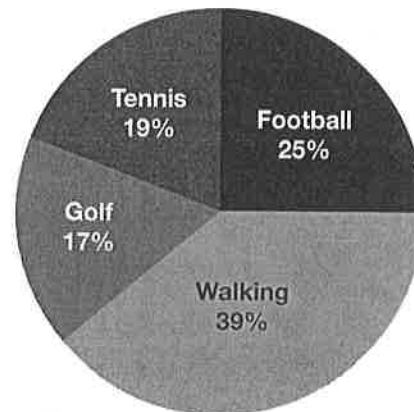
TRAP

Think about whether you need to find $\frac{3}{4}$ or $\frac{1}{4}$ of the total.

15 The pie chart shows the percentages of students who generally choose one of four recreational activities.

60 students were asked to choose one of these activities.

How many students could be expected to choose football?



- 4
 10
 15
 25

HINT

The number expected to choose an activity will depend on the percentage of students who generally choose that activity.

16 Three of the four expressions shown below have the same value.

Which one has a different value?

HINT

Evaluate each expression.

$$\sqrt[3]{27}$$

$$\sqrt{5^2 - 4^2}$$

$$2 + 1$$

$$\frac{3 \times 8}{8 + 1}$$

17 Two-thirds of a group of students took part in a competition.

There were 24 in students in the group.

How many did **not** take part in the competition?

- 8 12 16 20

TRAP

First work out the fraction of students that did **not** take part.



18 A mouse begins at point A.

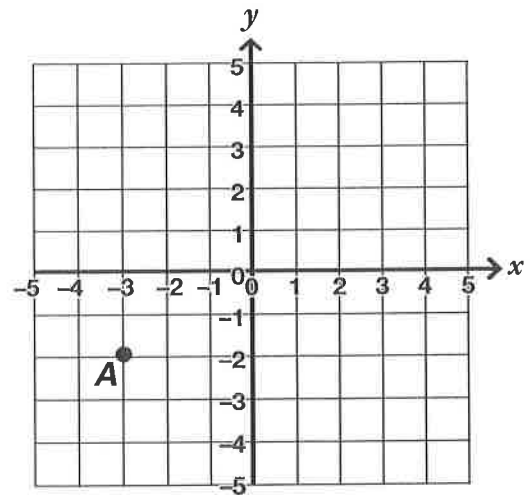
To reach a piece of cheese, it must move 5 units right and then 3 units up.

What are the coordinates of the point C where the mouse will find the cheese?

- (2,0) (0,3) (2,1) (5,1)

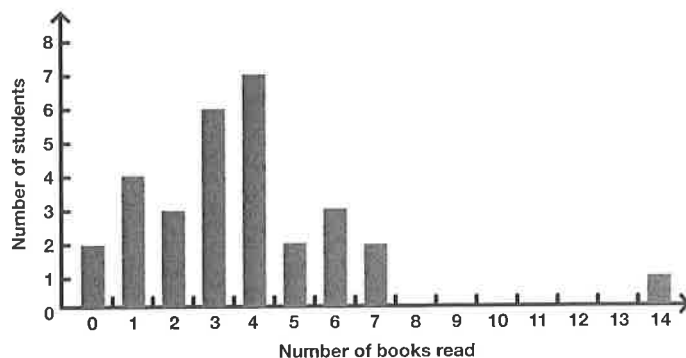
TRAP

Be careful to move across then up, rather than the other way around.



19 30 school students were asked how many books they had read during the summer holidays.

The data from the survey are shown in the bar graph below.



HINT

First find how many students read each number of books.

Which of the following is not true?

- The largest number of books read is 14.
 The mode is 4.
 The median is 7.
 The range is 14.

THINGS TO KNOW

For a set of scores: The mode is the most frequent score. The median is found by listing the scores in rank order and finding the middle score.

20 Two numbers added together equal -6 .
 One number divided by the other number equals -4 .
 What are the numbers?

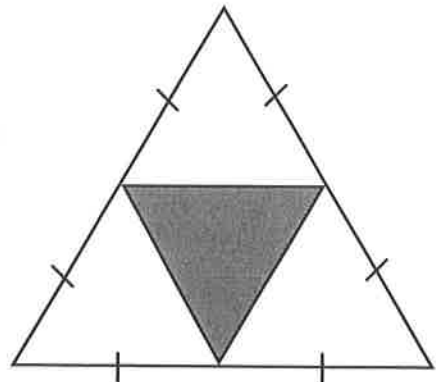


and

TIP
 Think about the sizes of the numbers if adding them results in a negative number.

THINGS TO KNOW
 If dividing one number into another results in a negative number, one of the numbers must be positive and the other negative.

21 The area of the shaded triangle is 6 cm^2 .
 What is the ratio of the area of the complete figure to the area of the shaded triangle?



HINT
 Think about the size of the four small triangles.

22 What is the value of $3h^2$ when $h = -2$?

-12

36

12

-36

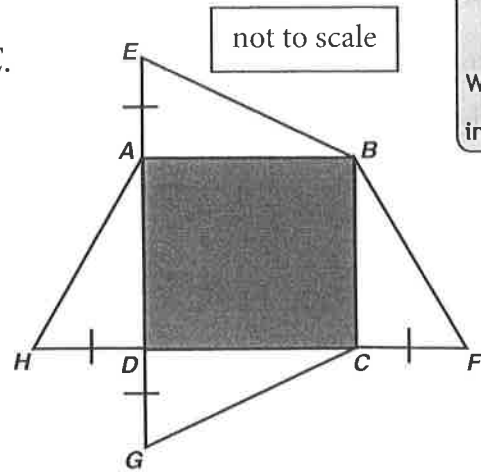


TIP
 Be careful of order of operations.

23 $ABCD$ is a square.
The length of AB is twice the length of AE .
What fraction of the figure is shaded?

HINT

Fit the triangles into the square.



Write your answer in the box.

24



Peta is 3 places in front of Annie in a race.
Suzie is twice as many places behind Annie as Peta is places in front of Annie.

Freda is 4 places in front of Suzie.

Which of the following is true?

- Freda is in front of Annie.
- Freda is 3 places behind Annie.
- Freda and Annie are equal.
- Freda is 2 places behind Annie.

TIP

Use each piece of information to mark each girl's position on the diagram.

Shade one bubble.

25 Peter walked at 4 km per hour for 4 hours and then jogged for 2 hours.
He travelled a total distance of 30 km.
What was his average jogging speed?

km per hour

HINT

First work out how far Peter walked and how far he jogged.

THINGS TO KNOW

Speed = distance travelled divided by time taken.

Write your answer in the box.

26 A line is drawn through the points (2,6) and (4,4) and (0,y).

What is the value of y ?

2

8

10

12



HINT

For a straight line, the y value changes by the same amount for each unit of change in the x value.

27 Sam's family used 500 L of water per day last week.

This week they used 10% less water per day.

Which calculation will give the volume of water used per day this week?

500×1.1

500×0.9

$500 - 10$

$500 - 0.1$

HINT

A decrease of 10% means the new value must be 90% of the original amount.

28 Cards marked from 1 to 10 are shuffled and placed face down on a table.

One card is selected and its number is noted.

The card is returned to the table.

A second card is selected and its number is noted.

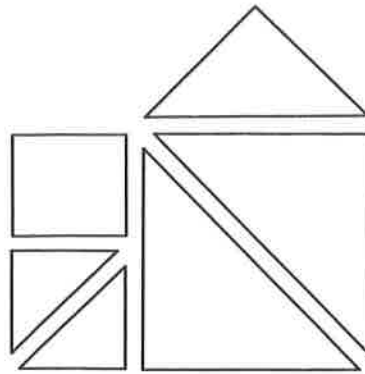
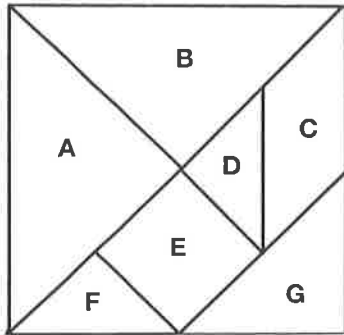
What is the chance, expressed as a decimal, that both cards selected are marked with a number less than 4?



TRAP

Remember that 'less than 4' means that 4 is not included. Is the chance the same when the second card is selected?

29 The tangram on the left is made into the shape on the right.



Which piece is missing?



TIP

Tick off each shape as you find it.

30 The number of children at the movies was 5 more than twice the number of adults.

If there were c children at the movies, how many adults were there?

HINT

Be careful of the order of operations.



$$2c + 5$$



$$\frac{c}{2} - 5$$



$$\frac{c - 5}{2}$$



$$2c - 5$$



31 Three of the four expressions shown below have the same value.

Which one is different?

HINT

Evaluate each expression.

$$\sqrt{\frac{1}{16}}$$



$$\left(\frac{1}{2}\right)^2$$



$$\frac{0.5}{2}$$



$$\frac{1}{2} + \frac{1}{2}$$

