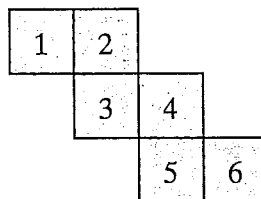**Question 1**

Which is the best estimate for

$29 + 57 \times 32 + 78$?

    **A**  $30 + 60 \times 40 + 80$

    **B**  $30 + 60 \times 30 + 70$

    **C**  $30 + 60 \times 30 + 80$

    **D**  $30 + 50 \times 40 + 70$

**Question 2**

Annabelle folded this net to make a cube.



What number is on the face opposite the face numbered 1?

    **A**  3           **B**  4           **C**  5           **D**  6

**Question 3**

There are 40 tickets in a hat. 15 are blue and the rest are green. Chad takes a ticket from the hat, without looking. What is the probability that the ticket is blue?

    **A**  $\dfrac{3}{8}$        **B**  $\dfrac{3}{5}$        **C**  $\dfrac{2}{5}$        **D**  $\dfrac{2}{3}$

**Question 4**

Guy has written down the first five numbers in a pattern:

    1.2, 2.4, 3.6, 4.8, 6

What is the ninth number in this pattern?

**Question 5**

1 metre and 35 millimetres is the same as

    **A**  1.35 m        **B**  1.0035 m        **C**  1305 mm        **D**  1035 mm

**Question 6**

Which is the answer to $0.6 \div 0.02$?
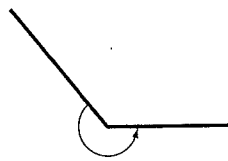
    **A**  0.03        **B**  0.3        **C**  3       **D**  30

**Question 7**

Which shows an obtuse angle?
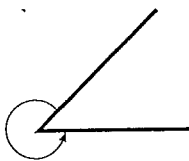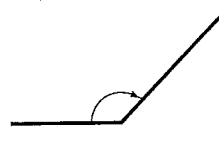


    **A**             **B**             **C**             **D**

**Question 8**

The value of $2 - 3p$ when $p = -4$ is

    **A**  14        **B**  −5        **C**  4       **D**  36

**Question 9**

What fraction has the same value as $3\dfrac{4}{5}$?

    **A**  $\dfrac{12}{5}$        **B**  $\dfrac{17}{5}$        **C**  $\dfrac{19}{5}$        **D**  $\dfrac{23}{5}$

**Question 10**

Here are a set of seven scores:

4, 4, 6, 6, 6, 7, 9

Which is **not** equal to 6?

**A** mean        **B** median        **C** mode        **D** range

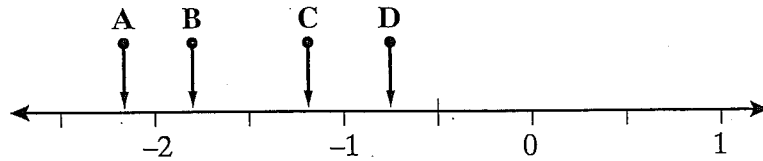**Question 11**

The perimeter of this rectangle is 20 metres.

3 m
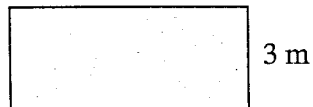
What is the area of the rectangle?        $\text{m}^2$

**Question 12**

Which arrow shows the position of −1.2 on the number line?



**A** A        **B** B        **C** C        **D** D

**Question 13**

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

**A**   $-2x + 2$            **B**   $-2x + 8$

**C**   $-10x - 15$          **D**   $-10x + 15$

**Question 14**

The ratio of boys to girls at a party is 3:5. There are 40 children at the party. How many boys are at the party?

      **A**  15        **B**  16        **C**  24        **D**  25

**Question 15**

A train arrived in Perth at a quarter to two in the afternoon after a $6\frac{3}{4}$ hour trip from Kalgoorlie. What time did it leave Kalgoorlie?

      **A**  6:30 am      **B**  6:45 am      **C**  7:00 am      **D**  7:30 am

**Question 16**

Which number is the largest?

      **A**  0.08      **B**  0.4      **C**  0.317      **D**  0.25

**Question 17**

Which property is **not always** true for rhombuses?

      **A**  The opposite sides are parallel.

      **B**  The opposite sides are equal.

      **C**  The adjacent sides are equal.

      **D**  The diagonals are equal.

**Question 18**

Which is equivalent to $19 \times 36 + 24 \times 19$?

      **A**  $60 \times 19$              **B**  $38 \times 60$

      **C**  $43 \times 55$              **D**  $19 \times 60 \times 19$

**Question 19**

$\triangle$ and $\bigcirc$ stand for numbers that are related by a rule.

| $\triangle$ | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| $\bigcirc$ | 3 | 12 | 27 | 48 | 75 |

What is the rule?

A $\quad \bigcirc = 3 \times \triangle$

B $\quad \bigcirc = 9 \times \triangle - 6$

C $\quad \bigcirc = \triangle \times \triangle + 2$

D $\quad \bigcirc = 3 \times \triangle \times \triangle$

---

**Question 20**

$7x - 3 = 5x + 9$

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

$x = $ ☐

---

**Question 21**

This drum has oil in it. If Evan pours 750 mL of oil into his engine, how much oil (in millilitres) will remain in the drum?

10 L

5 L
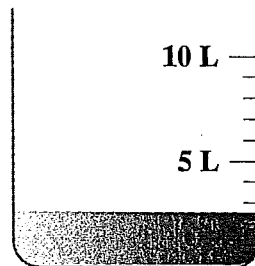
☐ mL

---

**Question 22**

15% of all cars in the car park are red. $\dfrac{3}{4}$ of all the red cars in the car park are sedans.

If there are 160 cars in the car park, how many are red sedans?

☐

**Question 23**

The temperature at 11 pm was −2°C. At 5 am it was 6°C colder than it was at 11 pm. At 9 am it was 9° warmer then it was at 5 am. What was the temperature at 9 am?

☐ °C

**Question 24**

Which is equivalent to $4^2 \times 2^3$?
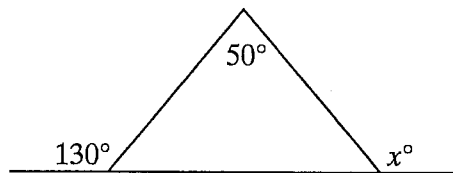
A  $4 \times 2 \times 2 \times 3$

B  $4 \times 4 \times 2 \times 2$

C  $4 \times 4 \times 4 \times 2$

D  $4 \times 2 \times 2 \times 2$

**Question 25**

What is the value of $x$?



☐

**Question 26**

What number is exactly halfway between $\frac{1}{4}$ and $\frac{1}{6}$?

A  $\frac{1}{5}$     B  $\frac{5}{24}$     C  $\frac{1}{2}$     D  $\frac{5}{12}$

**Question 27**

The average (mean) of five numbers is 8. If one of the numbers is left out, the average of the remaining numbers is 7. What number is left out?

A  7     B  8     C  10     D  12

**Question 28**

Trish measures the distance from Applegate to Orange on the map and finds it to be 5 cm.
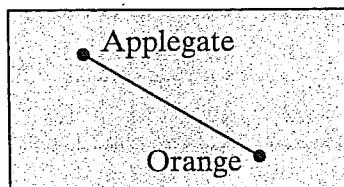
Scale: 1 cm represents 15 km

If Trish rides her bike at an average speed of 25 kilometres per hour, how long will it take to ride from Applegate to Orange?

☐ hours

**Question 29**

The graph of the line $y = 2 - 3x$ will be drawn on this grid.
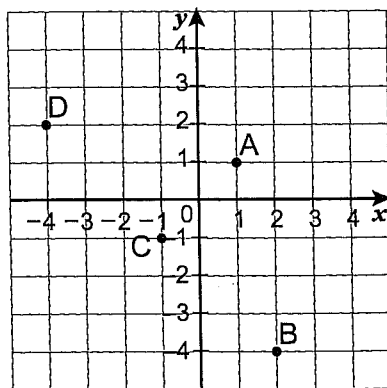
Which point will the line pass through?
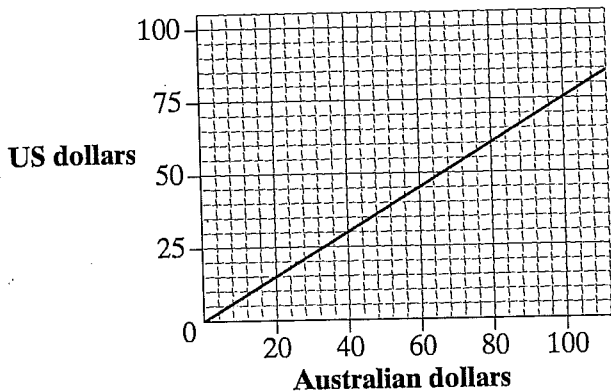
A  A          B  B          C  C          D  D

## Question 30

Pippa has US$45.



US to Aust dollars

NZ to Aust dollars
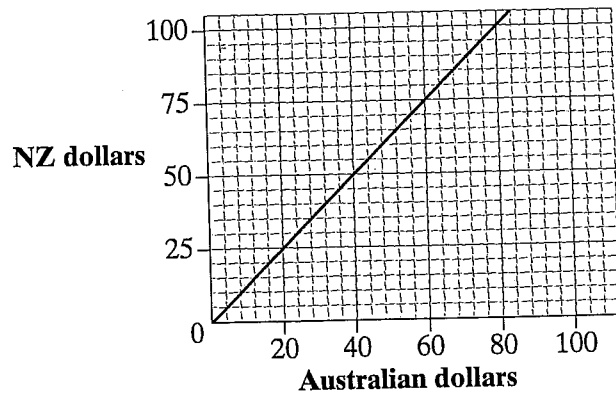
How much is this in New Zealand dollars?

NZ$ _____

## Question 31

On a car trip, Sid travelled for $5\frac{1}{2}$ hours at an average speed of 72 kilometres per hour.
His car used petrol at the rate of 8 litres per 100 km travelled. Which calculation will give
the amount of fuel (in litres) that Sid's car will have used on the journey?

A   $72 \times 5.5 \div 8 \times 100$

B   $72 \times 5.5 \times 8 \div 100$

C   $72 \div 5.5 \div 8 \times 100$

D   $72 \div 5.5 \times 8 \div 100$

## Question 32

In a certain country, letters can be posted at a cheaper rate provided the length ($l$ cm) and
height ($h$ cm) are such that $l < 3h - 5$ for values of $h$ between 6 and 25. The letter with
which dimensions could **not** be posted at the cheaper rate?

A   $l = 18, h = 8$

B   $l = 24, h = 9$

C   $l = 12, h = 12$

D   $l = 30, h = 15$

# END OF TEST 1—NON-CALCULATOR

| | |
|---|---|
| **1** C (Basic level) | **18 A** (Basic level) |
| **2 B** (Basic level) | **19 D** (Intermediate level) |
| **3 A** (Basic level) | **20** $x = 6$ |
| **4 10.8** (Basic level) | (Intermediate level) |
| **5 D** (Basic level) | **21 1750 mL** |
| **6 D** (Basic level) | (Intermediate level) |
| **7 C** (Basic level) | **22 18** (Advanced level) |
| **8 A** (Intermediate level) | **23 1°C** (Intermediate level) |
| **9 C** (Intermediate level) | **24 C** (Advanced level) |
| **10 D** (Basic level) | **25 100** (Intermediate level) |
| **11 21 m²** | **26 B** (Advanced level) |
| (Intermediate level) | **27 D** (Advanced level) |
| **12 C** (Basic level) | **28 3 h** (Advanced level) |
| **13 A** (Intermediate level) | **29 B** (Advanced level) |
| **14 A** (Intermediate level) | **30 NZ$75** |
| **15 C** (Intermediate level) | (Advanced level) |
| **16 B** (Intermediate level) | **31 B** (Advanced level) |
| **17 D** (Intermediate level) | **32 B** (Advanced level) |

**1** 29 is closer to 30 than 20.
57 is closer to 60 than 50.
32 is closer to 30 than 40.
78 is closer to 80 than 70.
The best estimate for $29 + 57 \times 32 + 78$ is
$30 + 60 \times 30 + 80$.

**2** The face numbered 4 will be on the face opposite the face numbered 1.
[If 1 was on the bottom, 2, 3, 5 and 6 would wrap around the middle and 4 would be on top.]
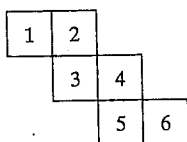
**3** 15 out of the 40 tickets are blue.

So, probability of blue $= \dfrac{15}{40}$

$= \dfrac{3}{8}$

**4** 1.2, 2.4, 3.6, 4.8, 6
The numbers increase by 1.2 each time.
The ninth number will be $9 \times 1.2$ or 10.8.

**5** 1 m = 1000 mm
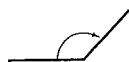So 1 m + 35 mm = (1000 + 35) mm
$= 1035$ mm

**6** $0.6 \div 0.02 = 60 \div 2$
$= 30$
[Move the decimal point so that you divide by a whole number. The decimal point must be moved the same number of places in both parts of the question.]

**7** An obtuse angle measures more than 90° but less than 180°.
The obtuse angle is C.
[A and B are reflex angles. D is a right angle.]

**8** When $p = -4$,
$2 - 3p = 2 - 3 \times -4$
$= 2 + 12$
$= 14$

**9** $3\dfrac{4}{5} = \dfrac{3 \times 5 + 4}{5}$

$= \dfrac{19}{5}$

**10** 4, 4, 6, 6, 6, 7, 9

Mean $= \dfrac{4 + 4 + 6 + 6 + 6 + 7 + 9}{7}$

$= \dfrac{42}{7}$

$= 6$

The median is the fourth score.
The median is 6.
There are more 6s than any other number.
The mode is 6.
Range $= 9 - 4$
$= 5$
The range is not equal to 6.

**11** Perimeter = 20 m
So length + width = 10 m
But the width is 3 metres, so the length must be 7 metres.
Area = length × width
$= (3 \times 7)$ m²
$= 21$ m²

**12** [Fill in more positions on the number line.]
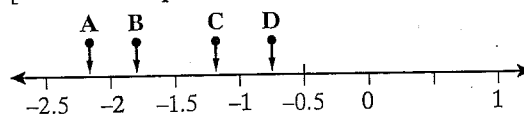
$-1.2$ is between $-1.5$ and $-1$.
C is pointing to $-1.2$.

**13** $5 - (2x + 3) = 5 - 2x - 3$
$= -2x + 2$

**14** For every 3 boys at the party there are 5 girls.
So 3 out of every 8 children at the party are boys.
Now $40 \div 8 = 5$
So there are 5 lots of 8 children.
Number of boys $= 5 \times 3$
$= 15$

**15** A quarter to two in the afternoon is 1:45 pm.
$\dfrac{3}{4}$ hour is 45 minutes.

So $\dfrac{3}{4}$ hour before 1:45 pm is 1:00 pm.

Another 6 hours before that is 7:00 am.

**16** [Write each number with the same number of places after the decimal point.]
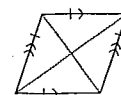0.080
0.400
0.317
0.250
So the largest number is 0.4.

**17** A rhombus is a parallelogram so its opposite sides are parallel.

All the sides of a rhombus are equal so the opposite sides are equal and the adjacent sides are equal.

The property that is not always true for a rhombus is that the diagonals are equal.
[If the diagonals of a rhombus are equal then the rhombus is a square.]

**18** $19 \times 36 + 24 \times 19 = 36 \times 19 + 24 \times 19$
$$= (36 + 24) \times 19$$
$$= 60 \times 19$$

**19**

| △ | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| ◯ | 3 | 12 | 27 | 48 | 75 |

Consider each option:

$◯ = 3 \times △$

When $△ = 1$,
$◯ = 3 \times 1$
$= 3 ✓$

When $△ = 2$,
$◯ = 3 \times 2$
$= 6 ✗$

The rule is not $◯ = 3 \times △$

$◯ = 9 \times △ - 6$

When $△ = 1$,
$◯ = 9 \times 1 - 6$
$= 3 ✓$

When $△ = 2$,
$◯ = 9 \times 2 - 6$
$= 12 ✓$

When $△ = 3$,
$◯ = 9 \times 3 - 6$
$= 21 ✗$

The rule is not $◯ = 9 \times △ - 6$

$◯ = △ \times △ + 2$

When $△ = 1$,
$◯ = 1 \times 1 + 2$
$= 3 ✓$

When $△ = 2$,
$◯ = 2 \times 2 + 2$
$= 6 ✗$

The rule is not $◯ = △ \times △ + 2$

$◯ = 3 \times △ \times △$

When $△ = 1$,
$◯ = 3 \times 1 \times 1$
$= 3 ✓$

When $△ = 2$,
$◯ = 3 \times 2 \times 2$
$= 12 ✓$

When $△ = 3$,
$◯ = 3 \times 3 \times 3$
$= 27 ✓$

When $△ = 4$,
$◯ = 3 \times 4 \times 4$
$= 48 ✓$

When $△ = 5$,
$◯ = 3 \times 5 \times 5$
$= 75 ✓$

The rule is $◯ = 3 \times △ \times △$

**20** $7x - 3 = 5x + 9$
[Subtract $5x$ from both sides.]
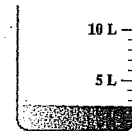$2x - 3 = 9$
[Add 3 to both sides.]
$2x = 12$
[Divide both sides by 2.]
$x = 6$

**21** The drum currently holds 2.5 litres.
$2.5\,L = 2500\,mL$
Amount remaining
$= (2500 - 750)\,mL$
$= 1750\,mL$



**22** Number of red cars = 15% of 160
Now 10% of 160 = 16
So 5% of 160 = 8
15% of 160 = 16 + 8
$= 24$
So there are 24 red cars in the car park.
Number of red sedans $= \dfrac{3}{4}$ of 24
Now $24 \div 4 = 6$
and $3 \times 6 = 18$
So 18 cars are red sedans.

**23** The temperature at 11 pm was $-2\,°C$.
At 5 am it was 6°C colder.
Temperature at 5 am $= (-2 - 6)\,°C$
$= -8°C$
At 9 am it was 9° warmer.
Temperature at 9 am $= (-8 + 9)\,°C$
$= 1°C$

**24** $4^2 \times 2^3 = 4 \times 4 \times 2 \times 2 \times 2$
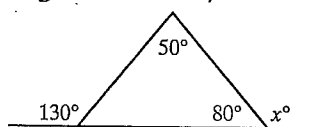[But this is not one of the options.]
Now $2 \times 2 = 4$
So $4^2 \times 2^3 = 4 \times 4 \times 4 \times 2$

**25** The exterior angle of a triangle is equal to the sum of the interior opposite angles.
Now $80 + 50 = 130$
So the angle in the triangle, adjacent to the angle marked $x°$, must be 80°.



Now, angles in a straight line add to 180°.
So $x + 80 = 180$
$x = 100$

**26** $\dfrac{1}{4} = \dfrac{6}{24}$

and $\dfrac{1}{6} = \dfrac{4}{24}$

The number halfway between $\dfrac{1}{4}$ and $\dfrac{1}{6}$ is the number halfway between $\dfrac{6}{24}$ and $\dfrac{4}{24}$.
It is $\dfrac{5}{24}$.

**27** The average of 5 numbers is 8.

Sum of those 5 numbers = 5 × 8

= 40

The average of 4 numbers is 7.

The sum of those 4 numbers = 4 × 7

= 28

Difference = 40 − 28

= 12

So the number that was left out must have been 12.

**28** The distance on the map is 5 cm.
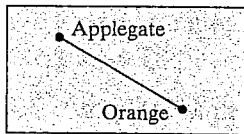


Scale: 1 cm represents 15 km

So, the actual distance = 5 × 15 km

= 75 km

The average speed = 25 km/h

Time = (75 ÷ 25) h

= 3 h

**29** $y = 2 - 3x$

When $x = 0$,

$y = 2 - 3 \times 0$

= 2

When $x = 1$,

$y = 2 - 3 \times 1$

= −1

[So you can draw the line on the grid.]
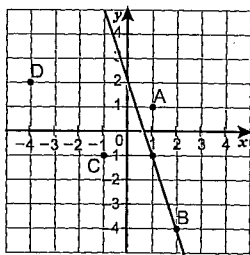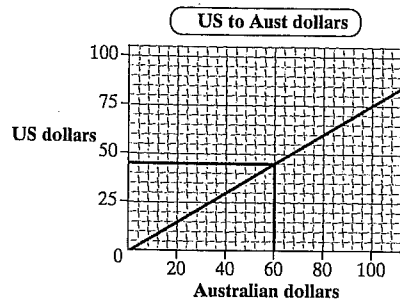


The line passes through point B.

[Or substitute the coordinates of each point into the equation. B is the point $(2, -4)$. When $x = 2$,
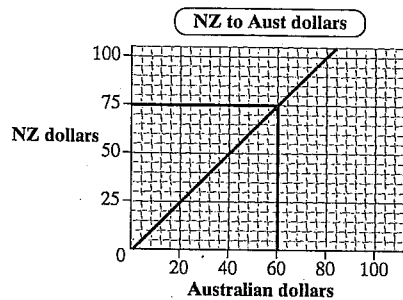
$y = 2 - 3 \times 2$

= −4

So B lies on the line.]

**30** $45US = $60 Australian



$60 Australian = NZ$75



**31** Sid travelled for $5\frac{1}{2}$ hours at an average speed of 72 km/h.

Distance travelled in km = 72 × 5.5

Number of lots of 100 km = (72 × 5.5) ÷ 100

The car used 8 litres for every 100 km travelled.

Petrol used = (72 × 5.5 ÷ 100) × 8

= 72 × 5.5 × 8 ÷ 100

The calculation is 72 × 5.5 × 8 ÷ 100

**32** $l < 3h - 5 \ (6 \le h \le 25)$

Try each option:

$l = 18, h = 8$

$18 < 3 \times 8 - 5$ ?

$18 < 19$ ✓

The inequality is true if $l = 18$ and $h = 8$.

$l = 24, h = 9$

$24 < 3 \times 9 - 5$ ?

$24 < 22$ ✗

The inequality is not true if $l = 24$ and $h = 9$.

A letter could not be posted at the cheaper rate if the length was 24 cm and height 9 cm.