



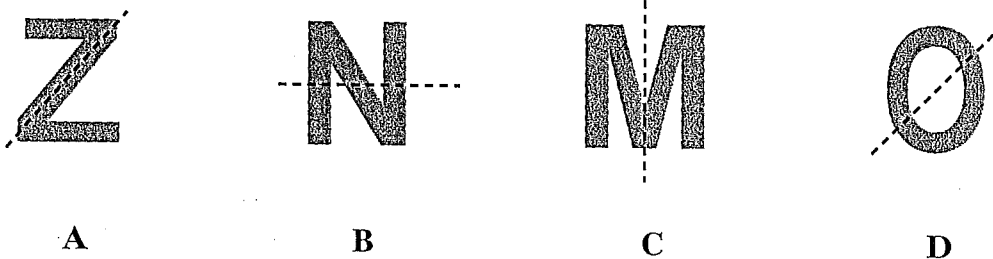
Question 1

The population of a nation is 23 287 564. What is this population to the nearest ten thousand?

- A 23 300 000
- B 23 290 000
- C 23 288 000
- D 23 280 000

Question 2

Which dotted line is an axis of symmetry?



A

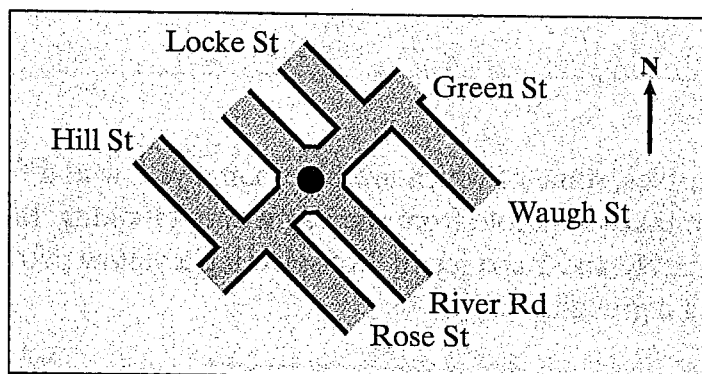
B

C

D

Question 3

Eric is driving south-west in Green Street.



He takes the first street on the right after the roundabout. Into which street does Eric turn?

- A Waugh Street
- B Locke Street
- C Rose Street
- D Hill Street

YEAR 9 NUMERACY SAMPLE TEST 2—CALCULATOR ALLOWED

Question 4

When 11 is added to a certain number and the result multiplied by 7 the answer is 203. What is the number?

Question 5

If $n = 4$, what is the value of $\frac{3n}{n-1}$?

A 7.5

B 4

C 3

D 2

Question 6

There are 60 girls at a dance. The ratio of boys to girls is 3 to 5. How many boys are at the dance?

Question 7

This stem-and-leaf plot was drawn up to show the scores of students in a test.

Scores of Class 9P

Stem	Leaf
6	4 5 6 8 9
7	1 3 5 7 8
8	1 2 2 4 6 9
9	0 3 5

Key
9 | 0
is a score of 90

What was the median?

A 78

B 71

C 82

D 81

Question 8

A rectangle has a perimeter of 36 m. The shorter sides are 7 m long. How long are the longer sides?

 m

YEAR 9 NUMERACY SAMPLE TEST 2 – CALCULATOR ALLOWED

Question 9

This jug holds orange juice. Sandi fills two glasses, each holding 250 mL, from the jug.

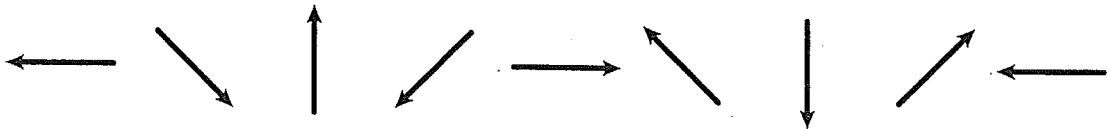
How many millilitres of juice remain in the jug?



mL

Question 10

This pattern is formed by rotating the arrow in a clockwise direction.



Through how many degrees is the arrow rotated each time?

°

Question 11

Which expression is equivalent to $x - x^2$?

A $-x$

B $x^2 - x$

C $-x^2 - x$

D $-x^2 + x$

Question 12

A box holds 9 red, 15 blue, 12 green and 18 white balls. If a ball is taken from the box without looking, what is the probability that it is green?

A $\frac{2}{9}$

B $\frac{3}{14}$

C $\frac{1}{3}$

D $\frac{1}{4}$

YEAR 9 NUMERACY SAMPLE TEST 2 – CALCULATOR ALLOWED

Question 13

Sam looks at this train timetable.

Fingal	7:17	7:59	8:30	9:09
Paget	7:31	8:18	8:47	9:23
Malak	7:52	8:40	9:08	9:42
City	8:05	8:53	9:21	9:54

What is the latest time that Sam should leave home if it takes him 9 minutes to walk to Paget Station and he needs to be in the city before a quarter past nine?

Question 14

There are 360 students enrolled at a college. One-quarter are part-time students and the rest full-time. 30% of the full-time students are mature-aged. How many mature-aged full-time students are enrolled at the college?

A 27

B 72

C 81

D 90

Question 15

Sarah bought 6 apples for \$4.69. The apples were selling for \$4.97 per kilogram. Which is the best approximation for the average mass of each of these apples?

A 20 g

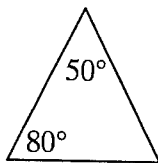
B 160 g

C 180 g

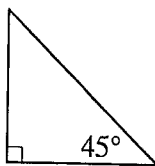
D 200 g

Question 16

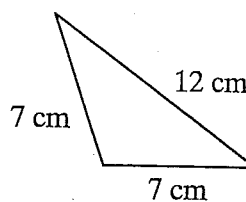
Which triangle is **not** isosceles?



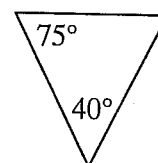
A



B



C



D

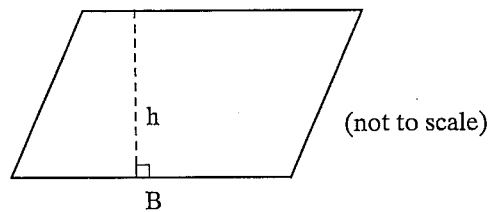
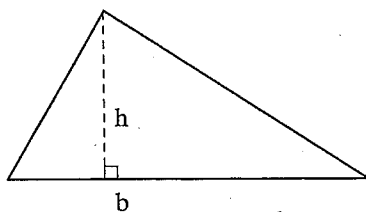
YEAR 9 NUMERACY SAMPLE TEST 2 – CALCULATOR ALLOWED

Question 17

Caitlin put 7 pens in each of 12 boxes and had 5 pens left over. If she wanted to put 10 pens in each of the boxes, how many more pens would she need?

Question 18

A triangle and a parallelogram both have the same perpendicular height and the same area. Which statement is correct?



- A The bases are equal in length.
- B The base of the triangle is twice that of the parallelogram.
- C The base of the triangle is half that of the parallelogram.
- D There is not enough information to compare the bases.

Question 19

$$5x - 2 > 3x$$

What value of x will make this inequality true?

- A $x = -3$ B $x = 0$ C $x = 1$ D $x = 2$

Question 20

Tom's scores in his last five tests were 82, 77, 85, 82 and 79. In his sixth test Tom scores 81. Which of the mean, median and mode will not change?

- A none (They will all change.)
- B mode only
- C mean and mode only
- D mean, mode and median

YEAR 9 NUMERACY SAMPLE TEST 2 – CALCULATOR ALLOWED

Question 21

$$y = 5x - 7$$

$$y = 3x + 5$$

What value of x satisfies both these equations at the same time?

A $x = 3$

B $x = 5$

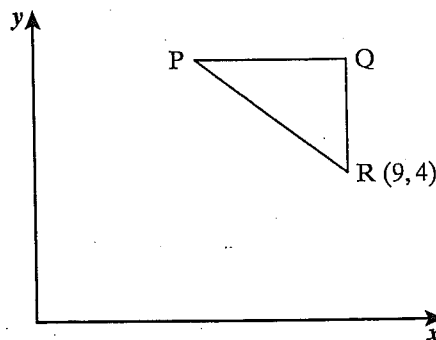
C $x = 6$

D $x = 7$

Question 22

PQ is parallel to the x -axis and QR is parallel to the y -axis. The coordinates of R are $(9, 4)$.

$PQ = 4$, $QR = 3$ and $PR = 5$.



What are the coordinates of P?

A $(5, 7)$

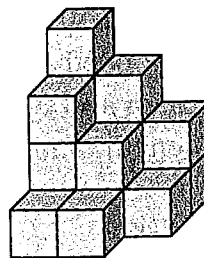
B $(5, 1)$

C $(4, 7)$

D $(4, 1)$

Question 23

Zoe is making a cube from identical blocks. What is the smallest number of extra blocks that Zoe needs to complete her cube (without rearranging any blocks)?



Question 24

Over the last four years, the value of a ring has increased by 60%. The ring is now valued at \$1200. What was the value four years ago?

A \$480

B \$720

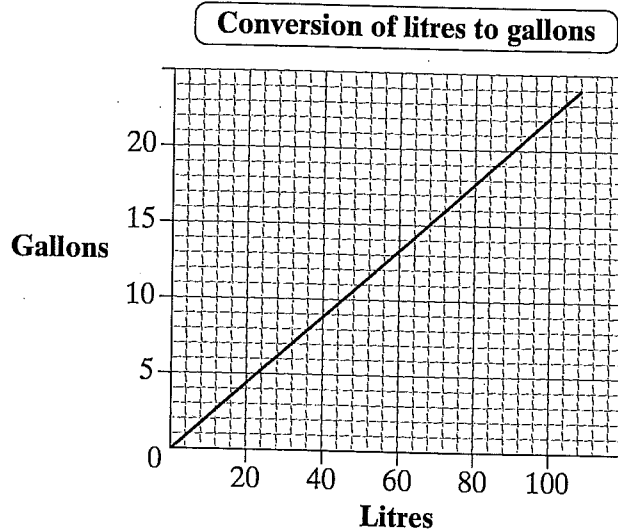
C \$750

D \$1000

YEAR 9 NUMERACY SAMPLE TEST 2 – CALCULATOR ALLOWED

Question 25

Harry has a container that holds 10 gallons. Approximately how many 3-litre bottles could Harry fill from his full container?



A 30

B 15

C 6

D 2

Question 26

Liam left home at 7:50 am and drove 175 km at an average speed of 70 kilometres per hour. He then stopped for 40 minutes before setting off again, arriving at his destination at 12:30 pm. If Liam averaged 84 kilometres per hour for the second part of the journey, what was the total length of his journey?

A 301 km

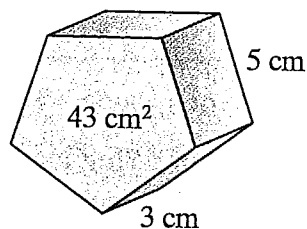
B 329 km

C 359 km

D 392 km

Question 27

The front face of this prism is a regular pentagon. The area of that face is 43 cm^2 . What is the total area of all the faces?



cm^2

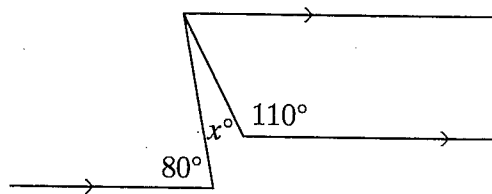
YEAR 9 NUMERACY SAMPLE TEST 2—CALCULATOR ALLOWED

Question 28

The first two numbers in a pattern are 4 and 11. The rule for the pattern is to multiply by 5 and then subtract a certain number. What is the fourth number in this pattern?

Question 29

What is the value of x in this diagram?



A 10

B 20

C 30

D 40

Question 30

Write 595 as a product of its prime factors.

Question 31

The average (mean) of eight numbers is 47. Cody left out a number but correctly calculated the average of the remaining numbers to be 43. What number did Cody leave out?

A 43

B 47

C 64

D 75

Question 32

$$5(2x - 1) + 3(x + 2) - \square = 6x + 1$$

What term replaces \square to make this equation true for all values of x ?

END OF TEST 2—CALCULATOR ALLOWED

- 1 **B** (Basic level)
- 2 **C** (Basic level)
- 3 **D** (Basic level)
- 4 **18** (Basic level)
- 5 **B** (Basic level)
- 6 **36** (Intermediate level)
- 7 **A** (Intermediate level)
- 8 **11 m** (Basic level)
- 9 **700 mL** (Intermediate level)
- 10 **225°** (Intermediate level)
- 11 **D** (Advanced level)
- 12 **A** (Basic level)
- 13 **8:09** (Basic level)
- 14 **C** (Intermediate level)
- 15 **B** (Advanced level)
- 16 **D** (Intermediate level)
- 17 **31** (Intermediate level)
- 18 **B** (Advanced level)
- 19 **D** (Intermediate level)
- 20 **C** (Intermediate level)
- 21 **C** (Advanced level)
- 22 **A** (Intermediate level)
- 23 **47** (Intermediate level)
- 24 **C** (Intermediate level)
- 25 **B** (Intermediate level)
- 26 **A** (Advanced level)
- 27 **161 cm²** (Advanced level)
- 28 **221** (Advanced level)
- 29 **A** (Advanced level)
- 30 **5 × 7 × 17** (Advanced level)
- 31 **D** (Advanced level)
- 32 **7x** (Advanced level)

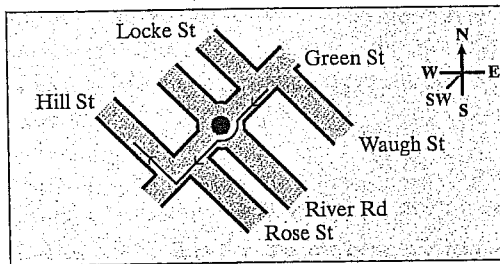
1 23 287 564 = 23 290 000 to the nearest ten thousand
 [23 287 564 is closer to 23 290 000 than 23 280 000. 23 300 000 is the population to the nearest hundred thousand and 23 288 000 is the population to the nearest thousand.]

2 The letter M is the only one that maps onto itself when folded along the dotted line.



The dotted line is an axis of symmetry in option C.

3 Eric turns into Hill Street.



4 After multiplying by 7 the answer was 203. Before multiplying by 7 the number must have been $203 \div 7$ or **29**

So when 11 is added to a number the result is 29.

The number is $29 - 11$ or 18.

5 When $n = 4$,

$$\frac{3n}{n-1} = \frac{3 \times 4}{4-1}$$

$$= \frac{12}{3}$$

$$= 4$$

6 There are 3 boys for every 5 girls at the dance. There are 60 girls at the dance.

$$\text{Number of boys} = 3 \times (60 \div 5)$$

$$= 3 \times 12$$

$$= 36$$

7 Scores of Class 9P

Stem	Leaf
6	4 5 6 8 9
7	1 3 5 7 8
8	1 2 2 4 6 9
9	0 3 5

Key
 9 | 0
 is a score of 90

There are 19 scores in total, so the middle score is the 10th score.

The median is 78.

8 Perimeter = 36 m

$$\text{Length} + \text{width} = (36 \div 2) \text{ m}$$

$$= 18 \text{ m}$$

But the width is 7 metres.

$$\text{Length} = (18 - 7) \text{ m}$$

$$= 11 \text{ m}$$

9 1 litre = 1000 mL

Each litre on the jug is divided into 5.



Each mark represents $(1000 \div 5)$ mL or 200 mL.

So the jug holds 1200 mL.

$$\text{Amount removed} = 2 \times 250 \text{ mL}$$

$$= 500 \text{ mL}$$

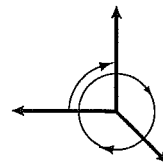
$$\text{Amount remaining} = (1200 - 500) \text{ mL}$$

$$= 700 \text{ mL}$$

10 In two rotations, the arrow turns through $360^\circ + 90^\circ$ or 450° .

$$\text{Angle of rotation} = (450 \div 2)^\circ$$

$$= 225^\circ$$



11 $x - x^2 = -x^2 + x$

12 Total number of balls in the box

$$= 9 + 15 + 12 + 18$$

$$= 54$$

$$\text{Probability of green ball} = \frac{12}{54}$$

$$= \frac{2}{9}$$

13

Fingal	7:17	7:59	8:30	9:09
Paget	7:31	8:18	8:47	9:23
Malak	7:52	8:40	9:08	9:42
City	8:05	8:53	9:21	9:54

A quarter past nine is 9:15.

So the latest train that Sam can catch is the one that arrives in the city at 8:53.

This train leaves Paget station at 8:18.

The latest time that Sam can leave home is 9 minutes before 8:18 or 8:09.

14 Number of students = 360

Number of part-time students = $360 \div 4$
 $= 90$

Number of full-time students = $360 - 90$
 $= 270$

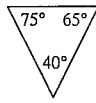
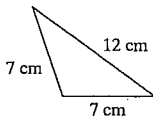
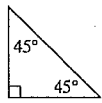
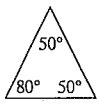
Number of mature-aged full-time students
 $= 30\%$ of 270
 $= 81$

15 Total mass = $(4.69 \div 4.97)$ kg
 $= 0.94366\dots$ kg
 $= 943.66\dots$ g

Average mass = $(943.66\dots \div 6)$ g
 $= 157.2769\dots$ g
 ≈ 160 g

16 Triangle C is isosceles because it has two equal sides.

[Find the remaining angle in each of the other triangles.]



Triangles A and B are both isosceles because they both have two equal angles.

Triangle D has three different angles. It is not an isosceles triangle. (It is scalene.)

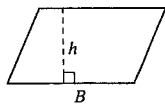
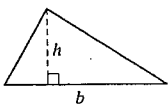
17 Number of pens Caitlin has = $12 \times 7 + 5$
 $= 84 + 5$
 $= 89$

Total number needed = 12×10
 $= 120$

Number of extra pens needed = $120 - 89$
 $= 31$

18 The area of a triangle is half that of a parallelogram with the same base and height. So if both the area and height are the same, the base of the triangle would need to be twice as long as that of the parallelogram.

[Or



Area of triangle = $\frac{1}{2}bh$

Area of parallelogram = Bh

So $\frac{1}{2}bh = Bh$

$\frac{1}{2}b = B$ (after dividing by h)

$b = 2B$ (after multiplying by 2)

So the base of the triangle is twice that of the parallelogram.]

19 $5x - 2 > 3x$

[Add 2 to both sides.]

$5x > 3x + 2$

[Subtract $3x$ from both sides.]

$2x > 2$

[Divide both sides by 2.]

$x > 1$

So, of the options, the only value of x greater than 1 is $x = 2$.

The value of x that will make the inequality true is $x = 2$.

[Or substitute each option into the inequality to see which is correct.]

20 Tom's scores (in order from lowest to highest) are 77, 79, 82, 82, 85.

Mode = 82

Mean = $(77 + 79 + 82 + 82 + 85) \div 5$
 $= 405 \div 5$
 $= 81$

Median = 82

A score of 81 is included.

The mode will still be 82.

The mean will still be 81.

[Because the number included is equal to the original mean.]

The median will be $\frac{81 + 82}{2}$ or 81.5.

So the mode and mean will not change but the median will change.

21 $y = 5x - 7$

$y = 3x + 5$

[If both equations are satisfied at the same time then $5x - 7$ and $3x + 5$ will have the same value (the value of y).]

$5x - 7 = 3x + 5$

[Add 7 to both sides.]

$5x = 3x + 12$

[Subtract $3x$ from both sides.]

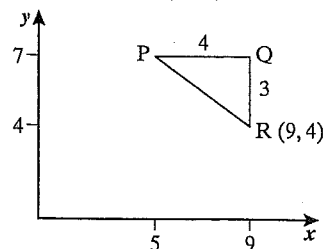
$2x = 12$

[Divide both sides by 2.]

$x = 6$

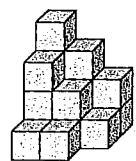
22 Q is 3 units above R so Q has coordinates (9, 7).

P is 4 units to the left of Q so it has coordinates (5, 7).



23 Zoe has placed 17 blocks in her cube.

The cube is 4 units high at the back, so it must also be 4 units long and 4 units wide.



Total number of blocks = $4 \times 4 \times 4$
 $= 64$

Extra blocks needed = $64 - 17$
 $= 47$

- 24** The value has increased by 60%.
So the value is now 160% of what it was four years ago.

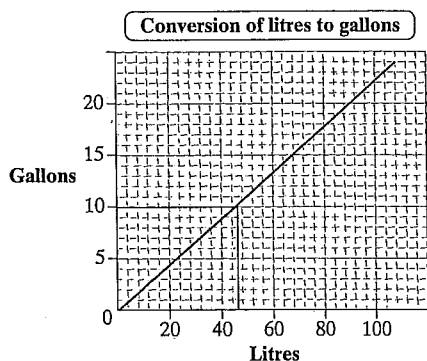
$$\text{Now } 160\% = \$1200$$

$$1\% = \$1200 \div 160 \\ = \$7.50$$

$$100\% = \$7.50 \times 100 \\ = \$750$$

The value four years ago was \$750.

25



From the graph, 10 gallons is about 45 litres.

$$\text{Number of 3-litre bottles} = 45 \div 3 \\ = 15$$

- 26** Time for first part of the journey
= $(175 \div 70)$ h
= 2.5 h

Now 2 hours after 7:50 am is 9:50 am.

Half an hour, or 30 minutes, after that is 10:20 am.

40 minutes after 10:20 am is 11:00 am.

So Liam set off again at 11:00 am.

He arrived at 12:30 pm so the time for the second part of the journey was 1.5 hours.

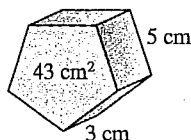
$$\text{Distance travelled} = (1.5 \times 84) \text{ km} \\ = 126 \text{ km}$$

$$\text{Total distance} = (175 + 126) \text{ km} \\ = 301 \text{ km}$$

- 27** The prism has two pentagonal faces, both with area 43 cm^2 .

It has five rectangular faces.

$$\text{Area of each rectangular face} = (5 \times 3) \text{ cm}^2 \\ = 15 \text{ cm}^2$$



$$\text{Total area} = (2 \times 43 + 5 \times 15) \text{ cm}^2 \\ = (86 + 75) \text{ cm}^2 \\ = 161 \text{ cm}^2$$

- 28** The first number is 4.

$$\text{Now } 5 \times 4 = 20$$

The second number is 11.

$$20 - 9 = 11$$

So the number that is subtracted is 9.

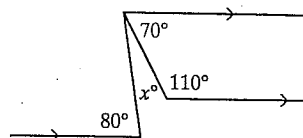
$$\text{The third number} = 5 \times 11 - 9 \\ = 55 - 9 \\ = 46$$

$$\text{The fourth number} = 5 \times 46 - 9 \\ = 230 - 9 \\ = 221$$

- 29** Co-interior angles formed by parallel lines add to 180° .

$$\text{Now } 180^\circ - 110^\circ = 70^\circ$$

So the angle that is co-interior to 110° is 70° .



Now alternate angles, formed by parallel lines, are equal.

$$\text{So } x + 70 = 80 \\ x = 10$$

- 30** Because it ends in 5, 595 is divisible by 5.

$$\text{Now } 595 \div 5 = 119$$

[So now we need to find the prime factors of 119.]

119 is not divisible by 3, because the digits $(1 + 1 + 9)$ add to 11 which is not divisible by 3.

119 is not divisible by 5.

Try 7:

$$119 \div 7 = 17$$

17 is prime.

$$\text{So } 595 = 5 \times 7 \times 17$$

- 31** The average of 8 numbers is 47.

$$\text{Sum of those 8 numbers} = 8 \times 47 \\ = 376$$

The average of 7 numbers is 43.

$$\text{Sum of those 7 numbers} = 7 \times 43 \\ = 301$$

$$\text{Difference} = 376 - 301 \\ = 75$$

So the number Cody left out was 75.

- 32** $5(2x - 1) + 3(x + 2) - \square = 6x + 1$

$$10x - 5 + 3x + 6 - \square = 6x + 1$$

$$13x + 1 - \square = 6x + 1$$

[Subtract 1 from both sides.]

$$13x - \square = 6x$$

$$\text{So } \square = 7x$$