2022 Year 7 Topic Tests Information Sheet

2022 Year 7 Topic Tests is a set of short answer questions and their solutions.

The topics covered are:
- Numbers, Percentages and Fractions (4 questions)
- Ratios, Rates and Time (3 questions)
- Patterns and Algebra (4 questions)
- Geometry (4 questions)
- Linear Relationships (4 questions)
- Probability (3 questions)
- Statistics (3 questions)

2022 Year 7 Topic Tests also includes a **Mid-year test** that consists of:
- 15 multiple choice questions
- 5 short answer questions
- 2 extended response questions

Mid-year test covers all topic except Probability and Statistics.

Distribution
Electronic copies will be emailed to you

File format
MS Word DOCX format and PDF format

Release date
1st of March 2022

Pricing
$105

2022 Year 7 Mathematics
Numbers, Percentages and Fractions Test

Time allowed: 1 hour
Total marks: 30 marks

Question 1 (6 marks)
Consider the following numbers.

$1\frac{2}{5}$	-3	$\frac{60}{12}$	2^2

a. Write down the smallest number. 1 mark

_____

b. Express $1\frac{2}{5}$ as an improper fraction. 1 mark

_____

c. How many of these numbers are integers? 1 mark

_____

d. Evaluate $-3 \div \frac{60}{12}$, expressing your answer as a fraction in simplest form. 2 marks
Show all working.

_____

_____

_____

e. Write the correct inequality (> or <) in the box below. 1 mark

$$\frac{60}{12} \quad \square \quad 1\frac{2}{5}$$

Question 2 (8 marks)

a. 1 mark

0.75 (A1)

b. 2 marks

$\frac{1}{2}+\frac{3}{5}=\frac{5}{10}+\frac{6}{10}$ (A1)

$=\frac{11}{10}$

$=1\frac{1}{10}$ (A1)

c. 2 marks

$\frac{3}{5}\times 100$ (A1)

$=60\%$ (A1)

d. 2 marks

$30-30\times\frac{1}{2}-30\times\frac{2}{5}$ (A1)

$=30-15-12$

$=3$ (A1)

● Accept any other valid method.

e. 1 mark

When n is an odd number. (A1)

2022 Year 7 Mathematics
Ratios, Rates and Time Test

Time allowed: 1 hour
Total marks: 30 marks

Question 1 (10 marks)

a. Convert 0935 to 12-hour time. 2 marks

_____

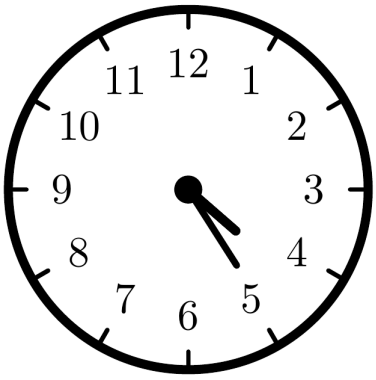
_____

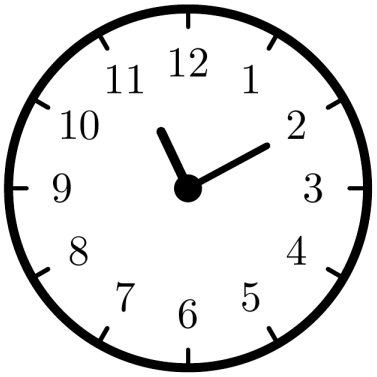
b. What is the time 3 hours and 25 minutes after 10:48 am? 2 marks
Write your answer in 12-hour time.

_____

_____

c. When Ray left home one afternoon, the time was as shown on the left clock. 2 marks





When he returned home on the same day, the time was as shown on the right clock.
How long was Ray out for?
Show all working.

_____

_____

_____

Question 2 (10 marks)

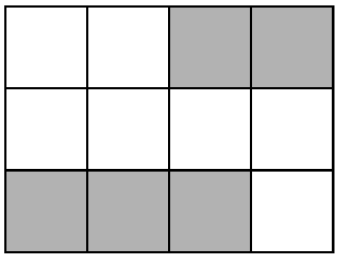
a. Complete the ratio below by writing the appropriate number in the gap. 1 mark

$2:5 = 12:\_\_\_\_\_$

b. Simplify $\frac{5}{45}$. 1 mark

c. At a workplace, the ratio of men to women is $2:3$. 2 marks
If there are 30 men, find the number of women in the workplace.

d. A rectangle is divided into 12 identical squares.



i. Find the ratio of shaded squares to unshaded squares. 1 mark

ii. How many **additional** squares must be shaded so that the ratio of shaded squares to unshaded squares is $5:1$? 2 marks

Question 3 (10 marks)

a. 2 marks

25×1.5 (A1)

$= \$37.50$ (A1)

b. 2 marks

$$\frac{360 \text{ m}}{24 \text{ hours}}$$

$$\frac{360 \text{ m}}{24 \times 60 \text{ min}}$$ (A1)

$= 0.25$ m/min (A1)

c. 2 marks

Can

\$1.60/0.25 L = \$6.40/L

Bottle

\$4.10/1 L = \$4.10/L

● Correct calculation is shown. (A1)

Bottle is the best value for money. (A1)

d.

i. 1 mark

12 km (A1)

ii. 1 mark

Not moving/stationary/any response that implies no moving from home. (A1)

iii. 2 marks

$$\frac{12-6}{2-1}$$ (A1)

$= 6$ km per hour (A1)

2022 Year 7 Mathematics
Patterns and Algebra Test

Time allowed: 1 hour
Total marks: 30 marks

Question 1 (9 marks)

a. Simplify $m + (-2m)$. 1 mark

b. Simplify $3 \times n \times n - 4$. 2 marks

c. Simplify $s^2 + s^2 + s^2$. 2 marks

d. Write $a^2 - \frac{b}{10}$ in expanded form. 2 marks

e. Complete the following equation to show the distributive law. 2 marks

$$a \times (b + c) = a \times b\_\_\_\_\_$$

Question 4 (8 marks)

a. The speed of a car is 1.5 km/min. 2 marks

Find an algebraic expression for the distance travelled, in kilometres, by the car after t hours.

b. Mark is M years old.

John is one year younger than three times Mark's age.

The sum of Mark's age and John's age is 59.

i. Write down John's age in terms of M. 1 mark

ii. Form an equation and solve it to find Mark's age. 3 marks

iii. What will John's age be 3 years from now? 2 marks

2022 Year 7 Mathematics
Patterns and Algebra Test
Total marks: 30 marks

Question 1 (9 marks)

a. 1 mark

$m + (-2m) = -m$ (A1)

b. 2 marks

$3 \times n \times n - 4 = 3n^2 - 4$

- The first term is correct ($3n^2$). (A1)
- The second term is correct (-4). (A1)

c. 2 marks

$s^2 + s^2 + s^2 = 3s^2$

- The coefficient of the final expression is 3. (A1)
- The final expression contains s^2. (A1)

d. 2 marks

$$a^2 - \frac{b}{10} = a \times a - b \div 10$$

- The first term is correct ($a \times a$). (A1)
- The second term is correct ($-b \div 10$). (A1)

e. 2 marks

$a \times (b + c) = a \times b + \boldsymbol{a \times c}$

- The + symbol. (A1)
- Correct second expression ($a \times c$). (A1)

Question 2 (6 marks)

a. 1 mark

The sum of p and 3. (A1)

- Accept "The number 3 more than p".

b. 1 mark

$(a + b) \div 2$ or $\frac{a+b}{2}$ (A1)

c. 2 marks

$c + \sqrt{d}$

- Correct first term (c). (A1)
- Correct second term ($\sqrt{d}$). (A1)

d. 2 marks

$x \times y \times z$

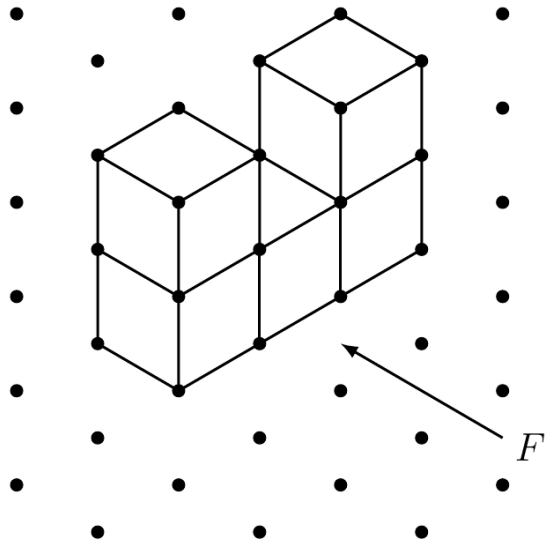
$= 2 \times (-3) \times 7$ (A1)

$= -42$ (A1)

2022 Year 7 Mathematics
Geometry Test

Time allowed: 1 hour
Total marks: 30 marks

Question 1 (5 marks)
Consider the following solid drawn on square dot paper.



a. Draw the shape observed when viewing the solid from:

i. the top 1 mark

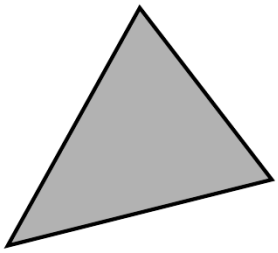
ii. point *F*. 2 marks

b. Find the volume of the solid. 2 marks

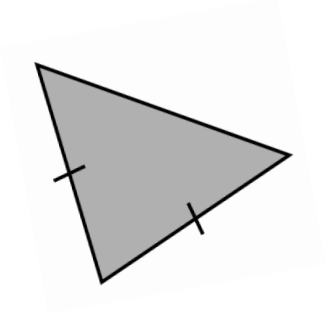
_____

_____

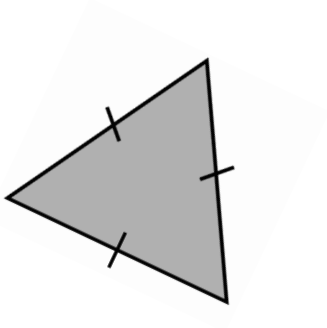
Question 2 (5 marks)
Consider the following three triangles labelled A, B and C that are drawn to scale.



Triangle A



Triangle B



Triangle C

a. Circle the correct answer for each the following questions.

i. Which triangle is an equilateral triangle? 1 mark

Triangle A Triangle B Triangle C

ii. Which triangle is an isosceles triangle? 1 mark

Triangle A Triangle B Triangle C

iii. What is the size of an interior angle of triangle C? 1 mark

30º 45º 60º 90º

b. Triangle A has no equal sides.

i. Complete the following sentence with the appropriate words. 1 mark

The sides lengths and the _____ of Triangle A are all unequal.

ii. Write down the mathematical name of Triangle A. 1 mark

_____

2022 Year 7 Mathematics
Geometry Test
Total marks: 30 marks

Question 1 (5 marks)

a.

i. 1 mark

● Correct diagram. (A1)

ii. 2 marks

● Correct diagram. (A1)×2

b. 2 marks

The volume of the solid is

$5 \times 1 \times 1$ (A1)

$= 5 \text{ units}^3$ (A1)

Question 2 (5 marks)

a

i. 1 mark

Triangle C (A1)

ii. 1 mark

Triangle B (A1)

iii. 1 mark

60º (A1)

b.

i. 1 mark

interior angles (A1)

● Accept exterior angles.

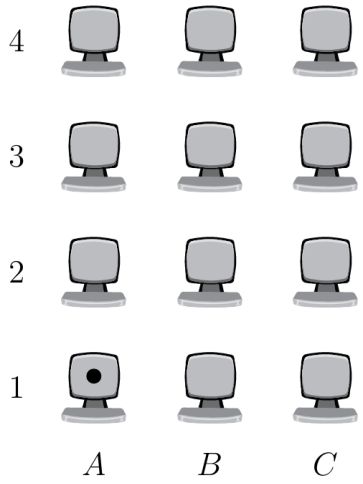
ii. 1 mark

Scalene (A1)

2022 Year 7 Mathematics
Linear Relationships Test

Time allowed: 1 hour
Total marks: 25 marks

Question 1 (5 marks)
The following diagram shows the seating plan in a small class.
There are three seats in each row.



Jane is currently seated at 1*A* (marked ● above).

a. How many rows are there in the class? 1 mark

_____

b. Belinda is seated at 3*C*. 1 mark
Circle Belinda's seat on the diagram above.

c. Tom is sitting furthest from Jane. 1 mark
Write down the location of Tom's seat.

_____

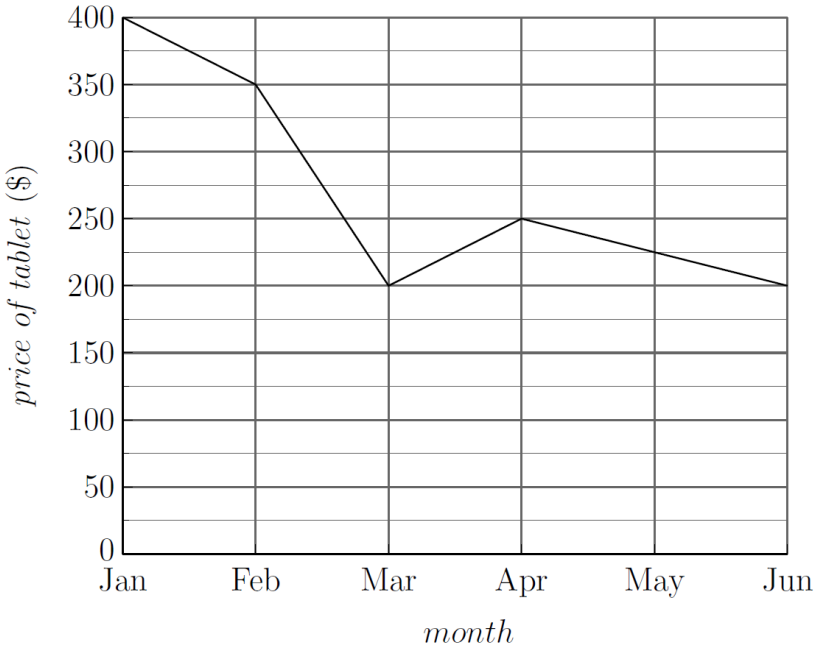
d. Jane wants to pass a note to Amy, who is sitting in 4*B*. 2 marks
Students can pass the note on to any neighbouring desk, excluding diagonal neighbours.
Describe two different paths the note can take.

_____

_____

_____

Question 2 (6 marks)
The graph below shows the change in the price of a new tablet between January and June.
Each mark on the horizontal axis represents the start of the month



a. What was the price of the tablet at the beginning of March? 1 mark

_____

b. In which month was the tablet most expensive? 1 mark

_____

c. Throughout March, did the price of the tablet increase or decrease? 1 mark
Circle the correct answer.

Increase Decrease

d. During which month did the price of the tablet decrease the most? 1 mark

_____

e. What is the rate of decrease of the price of the tablet between April and May? 1 mark

_____

f. By how much did the price of the tablet decrease between January and June? 1 mark

_____

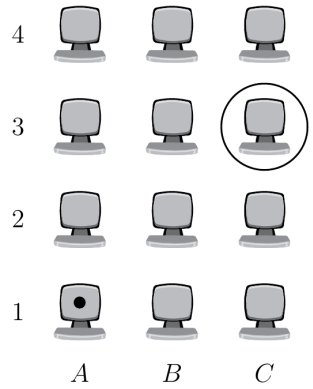
2022 Year 7 Mathematics
Linear Relationships Test
Total marks: 25 marks

Question 1 (5 marks)

a. 1 mark

4 (A1)

b. 1 mark



● The correct seat circled. (A1)

c. 1 mark

4*C* (A1)

d. 2 marks

The note can be passed one seat to the right and three seats up. (A1)
Or the note can be passed three seats up and then one to the right. (A1)

Question 2 (6 marks)

a. 1 mark

$200 (A1)

b. 1 mark

January (A1)

c. 1 mark

Increase (A1)

d. 1 mark

February (A1)

e. 1 mark

$25 per month (A1)

f. 1 mark

$400 – $200 = $200 (A1)

2022 Year 7 Mathematics
Probability Test

Time allowed: 1 hour
Total marks: 20 marks

Question 1 (6 marks)

A fair coin is tossed once.
Determine whether the following statements are true or false.

a. There is a guarantee that a head is obtained. 1 mark

True False

b. A single coin toss is called a trial. 1 mark

True False

c. The sample space of the coin toss is {head, tail}. 1 mark

True False

d. If a tail is obtained, the outcome for the coin toss is “obtaining a tail”. 1 mark

True False

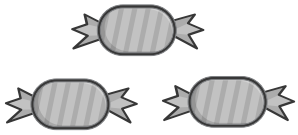
e. The coin toss is not a random experiment. 1 mark

True False

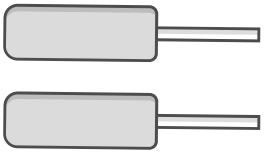
f. The probability of obtaining a head is not 0.5. 1 mark

True False

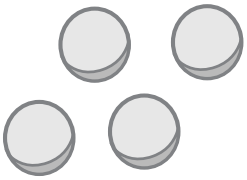
Question 3 (6 marks)
At a party, there is a selection of sweets, including lollies, icy poles and caramels.



Lollies



Icy poles



Caramels

a. Suppose that one item is chosen without looking.

i. What is the probability that an icy pole is chosen? 1 mark
Write your answer as a fraction in simplest form.

_____

_____

ii. What is the probability that a chocolate is chosen? 1 mark

_____

iii. Calculate the probability of choosing a lolly. Give a qualitative description of this probability. 2 marks
Show all working.

_____

_____

_____

b. An additional item is added to the sweets shown above. 2 marks
If the probability of choosing a caramel is now 0.5, determine whether a lolly, icy pole or caramel was added.

_____

_____

2022 Year 7 Mathematics
Probability Test
Total marks: 20 marks

Question 1 (6 marks)

a. 1 mark

False (A1)

b. 1 mark

True (A1)

c. 1 mark

True (A1)

d. 1 mark

True (A1)

e. 1 mark

False (A1)

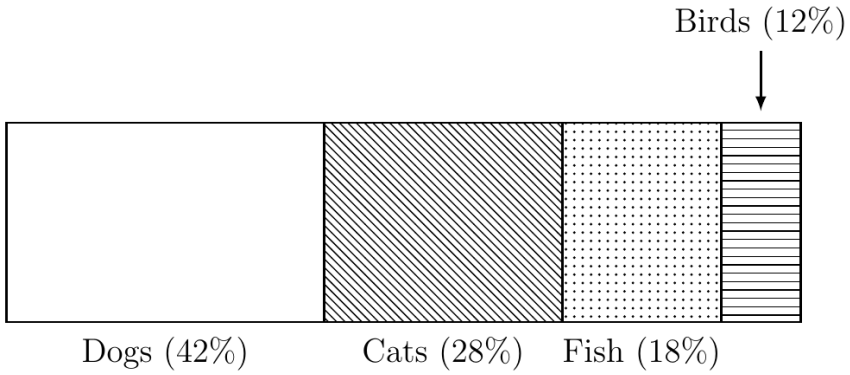
f. 1 mark

False (A1)

2022 Year 7 Mathematics
Statistics Test

Time allowed: 1 hour
Total marks: 20 marks

Question 1 (6 marks)
The divided bar graph below shows the favourite pet among some families.



a. Which animal is the most popular pet among the families? 1 mark

_____

b. What is the percentage of families whose favourite pets are cats or birds? 1 mark

_____

c. Your friend tells you that there are 42 families whose favourite pets are dogs. 2 marks
Explain whether your friend is correct or incorrect.

_____

_____

d. State one disadvantage of using a divided bar graph. 1 mark

_____

_____

e. State the name of another graph that could be used instead of the divided bar graph. 1 mark

_____

Question 2 (8 marks)
The heights of six Year 7 boys in a class were measured and recorded.
The results are shown below.

146 cm 147 cm 150 cm 151 cm 151 cm 167 cm

a. What is the median height? 1 mark

_____

b. Find the range. 1 mark

_____

_____

c. Is 167 cm an outlier in the data? 2 marks
Justify your answer.

_____

_____

d. Calculate the mean height. 2 marks

_____

_____

e. What would happen to the mean height if the data value 167 cm was removed? 1 mark
Circle the correct answer.

Increase No change Decrease

f. State one reason why the dataset may not be suitable to estimate the average height of all Year 7 male students. 1 mark

_____

2022 Year 7 Mathematics
Statistics Test
Total marks: 20 marks

Question 1 (6 marks)

a. 1 mark

Dogs (A1)

b. 1 mark

28% + 12% = 40% (A1)

c. 2 marks

Incorrect. (A1)

The actual number of families whose favourite pets are dogs depends on the total number of families surveyed. (A1)

d. 1 mark

Possible answers include:

– Harder to read when there are many segments

– Have to calculate the percentage of each segment.

● One valid statement is given. (A1)

e. 1 mark

Column graph/bar chart/sector graph/pie chart (A1)

2022 YEAR 7 MATHEMATICS

MIDYEAR TEST

Reading time: 15 minutes
Writing time: 2 hours

QUESTION BOOK

Structure of book

Section	Number of questions	Number of questions to be answered	Number of marks
A	15	15	15
B	5	5	25
C	2	2	20
			Total 60

SECTION A

Instructions for Section A

Answer **all** questions.
Choose the response that is **correct** for the question.
A correct answer scores 1, an incorrect answer scores 0.
Marks will **not** be deducted for incorrect answers.
No marks will be given if more than one answer is completed for any question.

Question 1

$3 + (-5)$ evaluates to

A. –2
B. –1
C. 2
D. 8

Question 2

$6 \times \blacktriangle = -60$

The value of ▲ is

A. –55
B. –10
C. 10
D. 55

Question 3

Expressing $\frac{40}{3}$ in mixed fraction form gives

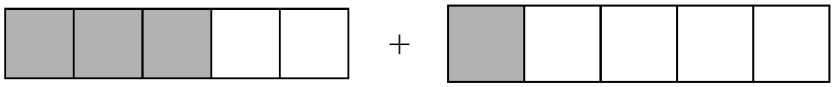
A. $13\frac{2}{3}$

B. $33\frac{1}{3}$

C. $13\frac{1}{3}$

D. 13.3

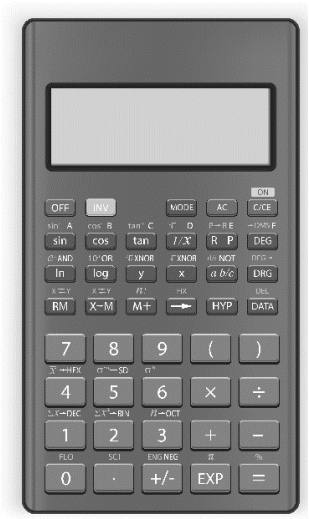
Question 4



The decimal number that represents the result of the addition shown above is

A. 0.2
B. 0.25
C. 0.5
D. 0.8

Question 5



The price of a calculator is $84.
If the calculator is discounted by 5%, its reduced price is

A. $78.80
B. $79.00
C. $79.80
D. $88.20

SECTION B

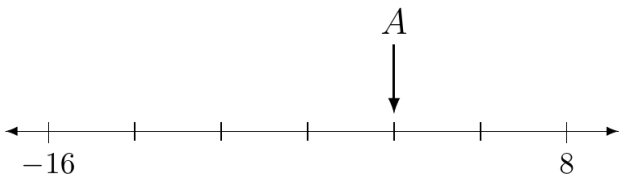
Instructions for Section B

Answer **all** questions.
In all questions where a numerical answer is required, an **exact** value must be given unless otherwise specified.
In questions where more than one mark is available, appropriate working **must** be shown.
Unless otherwise indicated, the diagrams in this book are **not** drawn to scale.

Question 1 (5 marks)

a. Evaluate $18 \div 3$. 1 mark

b. 1 mark



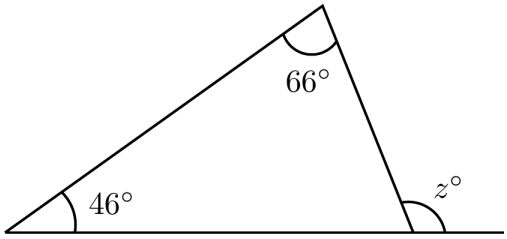
On the number line above, what is the integer indicated by A?

c. The temperature was 19ºC in the afternoon, but it dropped to –2ºC in the evening. 2 marks
How much lower was the temperature in the evening than in the afternoon?

d. Find the largest prime factor of 70. 1 mark

Question 5 (5 marks)

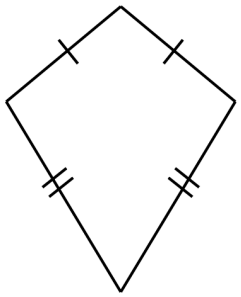
a. Consider the following diagram.



i. Find z. 2 marks

ii. State the geometric reasoning used in your answer in part **i**. 1 mark

b. The following diagram shows a kite.



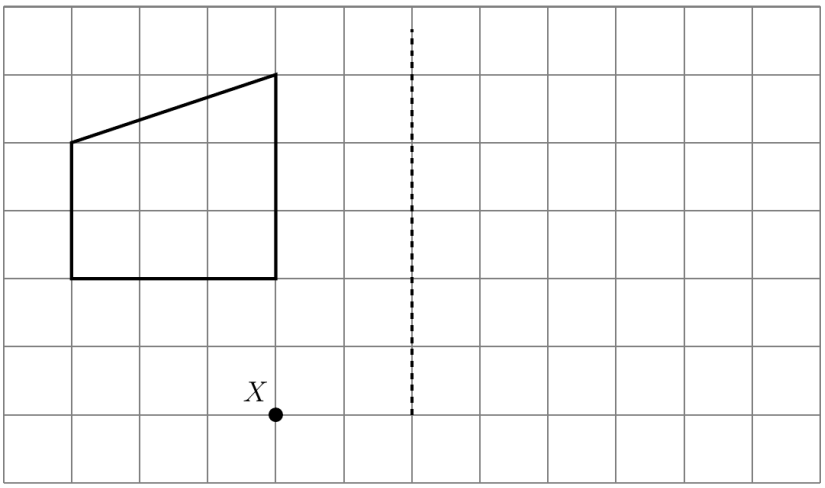
i. Complete the following sentence with the appropriate word in each gap. 1 mark

A quadrilateral is called a kite if it has _____ pairs of adjacent _____ that are equal.

ii. Write down the sum of the interior angles of a kite. 1 mark

END OF SECTION B

Question 2 (10 marks)
Consider the shape shown on the square grid. The side length of each square is 1 cm.



a. Write down the mathematical name of the shape. 1 mark

_____

b. Calculate the area of the shape. 2 marks

_____

_____

c. The shape is the cross-section of a prism with a height of 8 cm. 2 marks
Find the volume of the prism.

_____

_____

d. Reflect the shape about the dotted line. 2 marks

e. Rotate the shape 90º clockwise about the point X. 2 marks

f. The original shape is rotated dº anticlockwise to obtain the same image as that obtained in part **e**. 1 mark
Find the value of d.

_____

END OF QUESTION AND ANSWER BOOK

SOLUTIONS

SECTION A

Question	Answer
1	A
2	B
3	C
4	D
5	C
6	C
7	A
8	C
9	D
10	B
11	A
12	D
13	B
14	C
15	B

Question 1

$3 + (-5) = -2$

Answer is **A**.

Question 2

The value of ▲ is –10.

Answer is **B**.

Question 3

$\frac{40}{3} = 13\frac{1}{3}$

Answer is **C**.

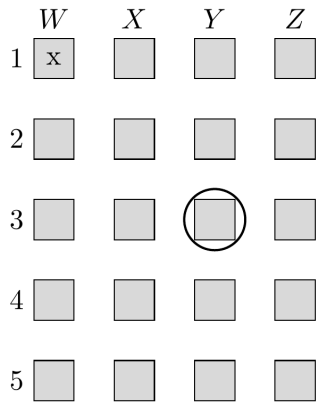
Question 4

$\frac{3}{5} + \frac{1}{5} = \frac{4}{5} = 0.8$

Answer is **D**.

Question 4 (5 marks)

a. 1 mark



● Correct seat is circled. (A1)

b. 2 marks

Either 1*X* (A1) or 2*W*. (A1)

c. 1 mark

Three seats to the right. (A1)

d. 1 mark

Any one of 3*W*, 2*X*, 2*Y* or 2*Z*. (A1)

Question 5 (5 marks)

a.

i. 2 marks

$z = 46 + 66$ (A1)

$= 112$ (A1)

● Accept finding the remaining angle in the triangle and using supplementary angles on a line.

ii. 1 mark

An exterior angle of a triangle is equal to the sum of the two interior opposite angles. (A1)

b.

i. 1 mark

two

sides

● Both words are correct. (A1)

ii. 1 mark

360º (A1)