

# MATHEMATICS MID-TERM HOLIDAY ASSIGNMENT (GRADE 9)

NAME: \_\_\_\_\_ CLASS: \_\_\_\_\_

1 Work out.

$$(6.5 + 3.2)(6.5 - 3.2)$$

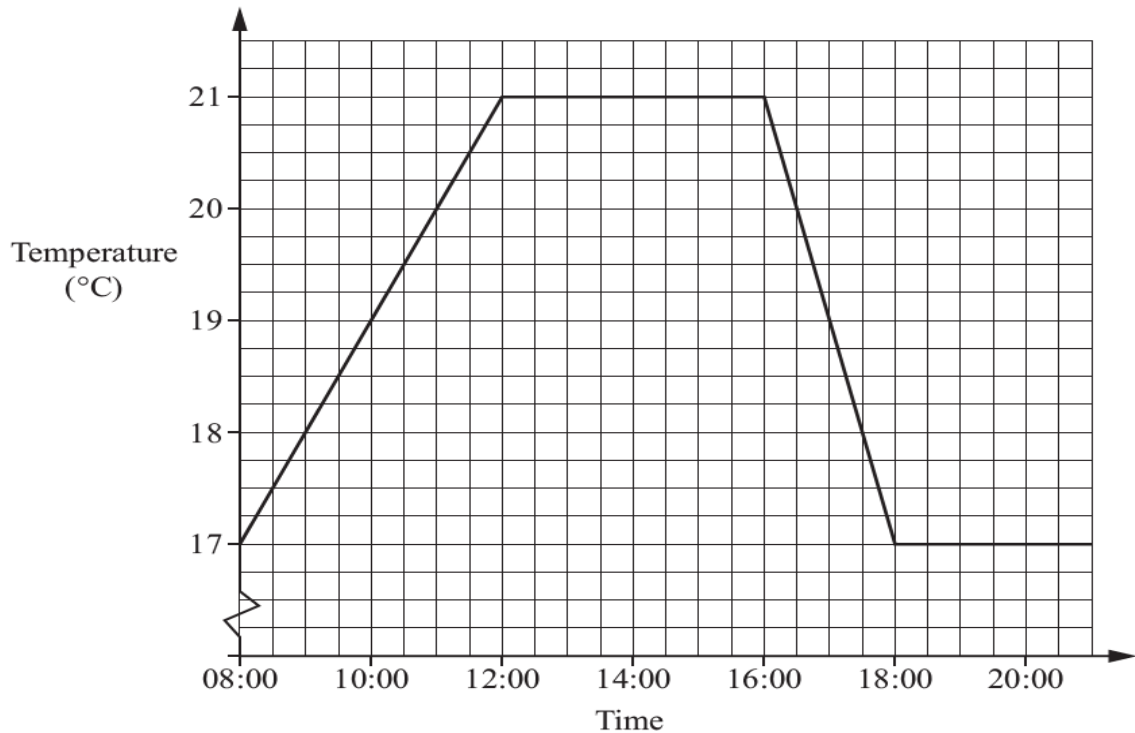
..... [1]

2 Pierre buys 56 litres of fuel for \$103.60  
Carlos buys 40 litres of the same fuel.

Work out how much Carlos pays.

\$ ..... [2]

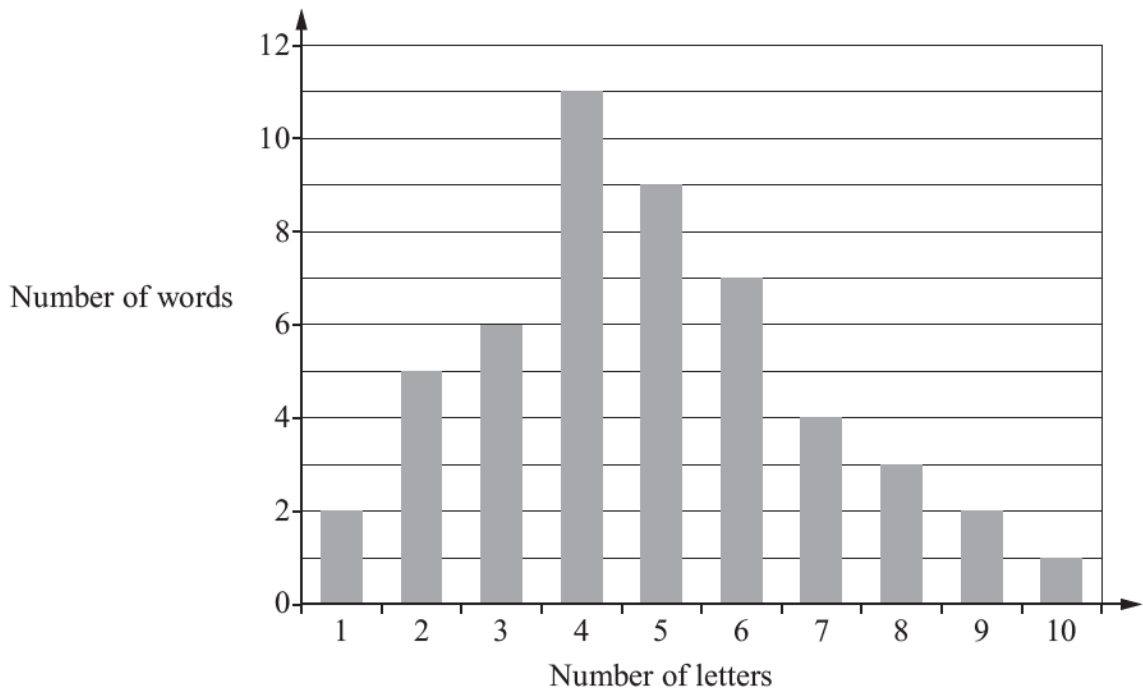
3 The graph shows the temperature of a room at different times during one day.



Work out the difference between the temperature at 11 am and at 5.30 pm.

..... °C [2]

4 The graph shows the number of letters in 50 words from a page in a book.



Write down

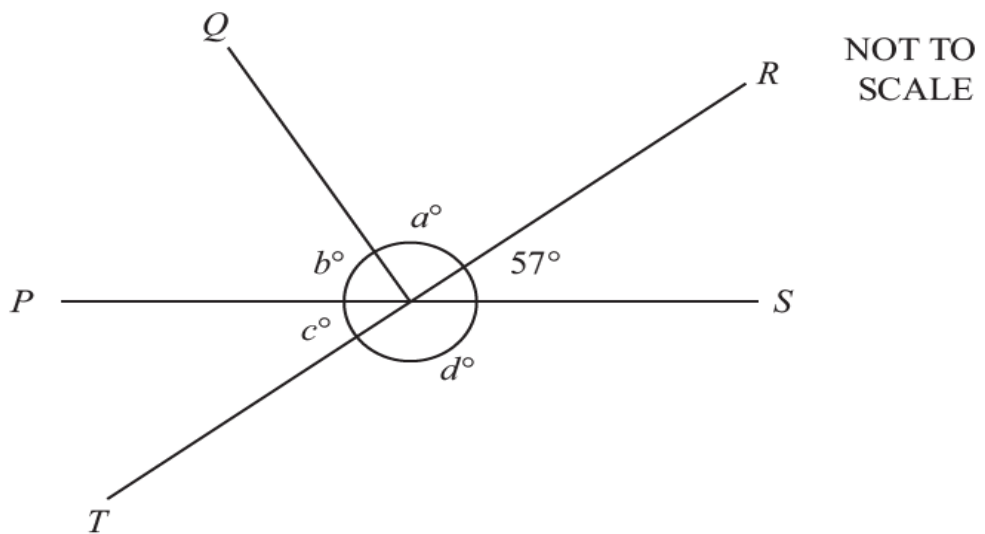
(a) how many more four-letter words there are than five-letter words,

..... [1]

(b) the largest number of letters in a word.

..... [1]

5 The diagram shows 5 angles.



*PS* and *RT* are straight lines.

Draw a ring around an angle that must be equal to  $123^\circ$ .

a      b      c      d

Tick (✓) the reason that **best** explains your answer.

Vertically opposite angles are equal

Angles on a straight line add up to  $180^\circ$

Angles around a point add up to  $360^\circ$

[1]

6 (a) Draw a ring around the best estimate of  $\sqrt{83}$

8.7

9.1

9.5

41.5

[1]

(b) Draw a ring around the value of  $7^0$

$\frac{1}{7}$

0

1

7

[1]

7 Body mass index can be used to measure how healthy a person is.

$$\text{Body mass index} = \frac{M}{H^2}$$

$M$  is mass in kilograms.

$H$  is height in metres.

Yuri is 1.8 m tall and his mass is 64.8 kg.

Calculate Yuri's body mass index.

\_\_\_\_\_ [1]

8 Angelique has a fair six-sided dice.



(a) Find the probability of throwing a multiple of 3

\_\_\_\_\_ [1]

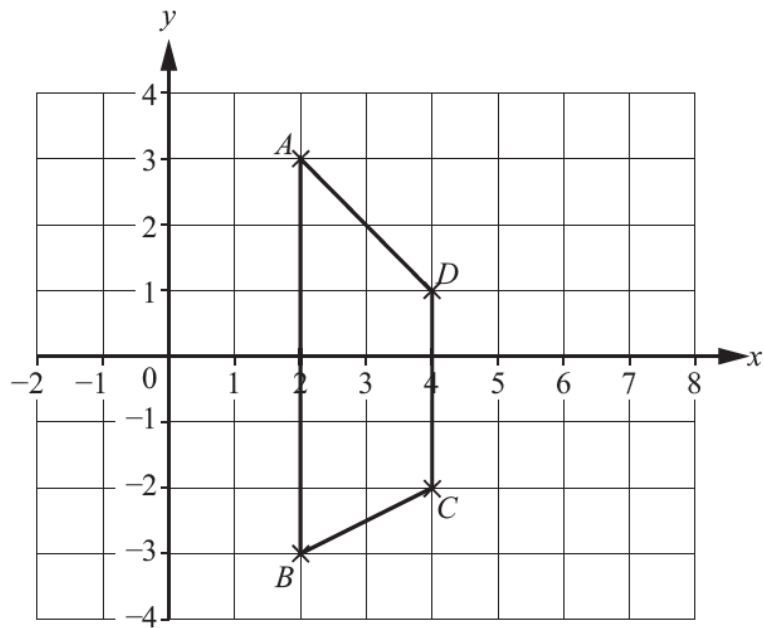
(b) Angelique throws a different six-sided dice 120 times.  
The table shows her results.

<b>Score</b>	1	2	3	4	5	6
<b>Frequency</b>	15	26	21	14	20	24

Work out the experimental probability of throwing a multiple of 3

\_\_\_\_\_ [1]

9 Trapezium  $ABCD$  is shown on the grid.



$E$  is a point on line  $AB$ .  
Angle  $AED = 90^\circ$

Mark  $E$  on the grid with a cross ( $\times$ ).

[1]

10 Manjit sells ice cream.

On Monday,

80 men bought ice cream,

31 of these men chose chocolate flavour,

41% of the women who bought an ice cream chose chocolate flavour.

Tick ( $\checkmark$ ) to show if men or women are more likely to choose chocolate flavour ice cream.

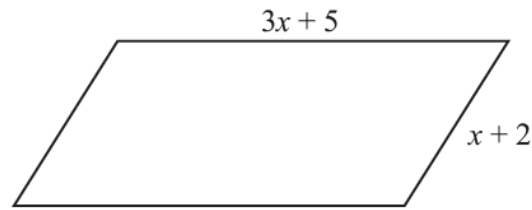
Men

Women

Show how you worked out your answer.

[2]

- 11 The diagram shows a parallelogram.  
All sides are measured in centimetres.



NOT TO  
SCALE

- (a) Write down an expression, in terms of  $x$ , for the perimeter of the parallelogram.

..... cm [1]

- (b) The perimeter of the parallelogram is 62 cm.

Work out the length of the **longest side** of the parallelogram.

[3]

- 12 Two fractions are  $\frac{5}{4}$  and  $\frac{4}{5}$

Write down which fraction is closer to 1  
Explain your answer.

..... is closer to 1 because .....

..... [1]

- 13 In 2012 there are 600 members of a sports club.  
In 2013 this increases to 744 members.

Work out the percentage increase in the number of members of the sports club.

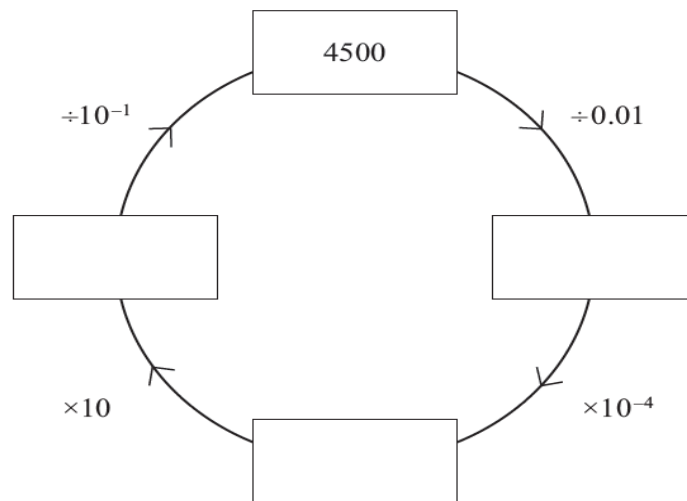
..... % [2]

- 14 Tick (✓) to show if each of these statements is true or false.

	True	False
4328.418 rounded to 2 significant figures is 4328.42	<input type="checkbox"/>	<input type="checkbox"/>
21.87954 rounded to 3 decimal places is 21.88	<input type="checkbox"/>	<input type="checkbox"/>
7.568499 rounded to 3 decimal places is 7.568	<input type="checkbox"/>	<input type="checkbox"/>
0.004122 rounded to 4 significant figures is 0.004	<input type="checkbox"/>	<input type="checkbox"/>

[2]

- 15 Complete the boxes in this diagram.



[2]

- 16 Complete the multiplication grid.

×	8	0.2
.....	6.4	.....
0.3	.....	.....

[2]

17 Solve the simultaneous equations using an algebraic method.

$$x + 2y = 13$$

$$3x + y = 24$$

You **must** show how you worked out your answers.

$$x = \dots\dots\dots$$

$$y = \dots\dots\dots [2]$$

18 *A* has coordinates (2, -2).  
*B* has coordinates (10, 14).

*C* is the midpoint of *AB*.

*D* is the midpoint of *CB*.

Find the coordinates of *D*.

$$(\dots\dots\dots, \dots\dots\dots) [2]$$

19 A dentist is investigating this question.

“Do people who use an electric toothbrush have healthier teeth than those who use a normal toothbrush?”

She examines each patient’s teeth and gives the teeth a score.

Patients with **lower** scores have healthier teeth.

Her results are shown in the diagram.

Use a normal toothbrush		Use an electric toothbrush
7 7 5	<b>0</b>	5 6 7 8 8 9
9 9 8 5 4 2 0	<b>1</b>	0 0 1 3 4 5 5 6 7 9
8 5 5 4 3 0	<b>2</b>	0 0 2 3 4 5 5
6 6 5 3 2 0	<b>3</b>	1 2 6 8
0	<b>4</b>	
sample size = 23		sample size = 27

Key: 0 | 3 | 1 represents a score of 30 for a patient using a normal toothbrush and a score of 31 for a patient using an electric toothbrush

Work out an appropriate **average** for both groups.

Name of average used .....  
 Average score for patients who use a **normal** toothbrush .....  
 Average score for patients who use an **electric** toothbrush .....

Write a conclusion to the dentist's question using this information.

.....  
 ..... [3]

20 (a) A sequence begins

14                  17                  20                  23

Write down a formula for the  $n$ th term of this sequence.

..... [2]

(b) The  $n$ th term of a different sequence is given by the formula

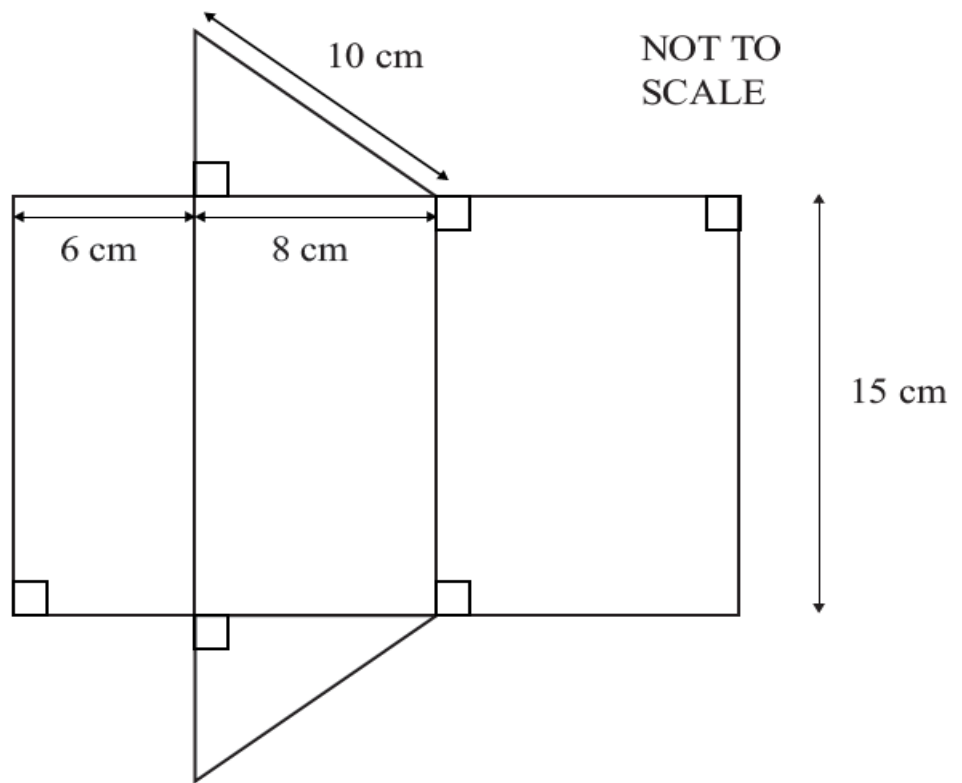
$$\frac{n}{2n+1}$$

Write down the first **three** terms of the sequence.

....., ....., ..... [2]



21 The diagram shows the sketch of a net of a triangular prism.



Work out the total surface area of the prism.

.....  $\text{cm}^2$  [3]

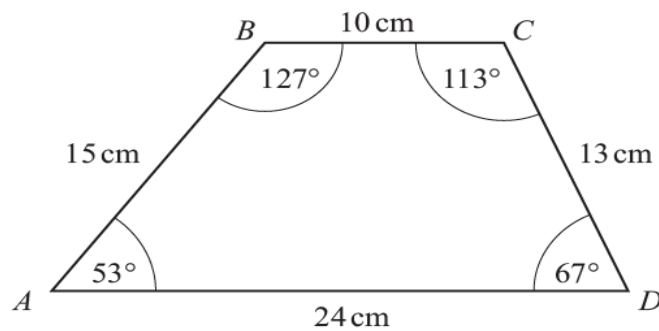
22 The equation  $x^2 + 8x = 144$  has a solution between  $x = 8$  and  $x = 9$

Use the method of trial and improvement to find the solution correct to one decimal place.  
 Show all your working in the table.  
 You may not need to use all the rows.

$x$	$x^2 + 8x$	Comment
8	$8^2 + 8 \times 8 = 128$	Too small
9	$9^2 + 8 \times 9 = 153$	Too big

$x =$  ..... [3]

23 The diagram shows trapezium  $ABCD$ .



NOT TO SCALE

$ABCD$  is enlarged.

The centre of the enlargement is  $B$  and the scale factor is 3

Complete the sentences.

<p>The length of the <b>longest</b> side of the enlargement of <math>ABCD</math> is ..... cm.</p> <p>The size of the <b>smallest</b> angle of the enlargement of <math>ABCD</math> is ..... °.</p>
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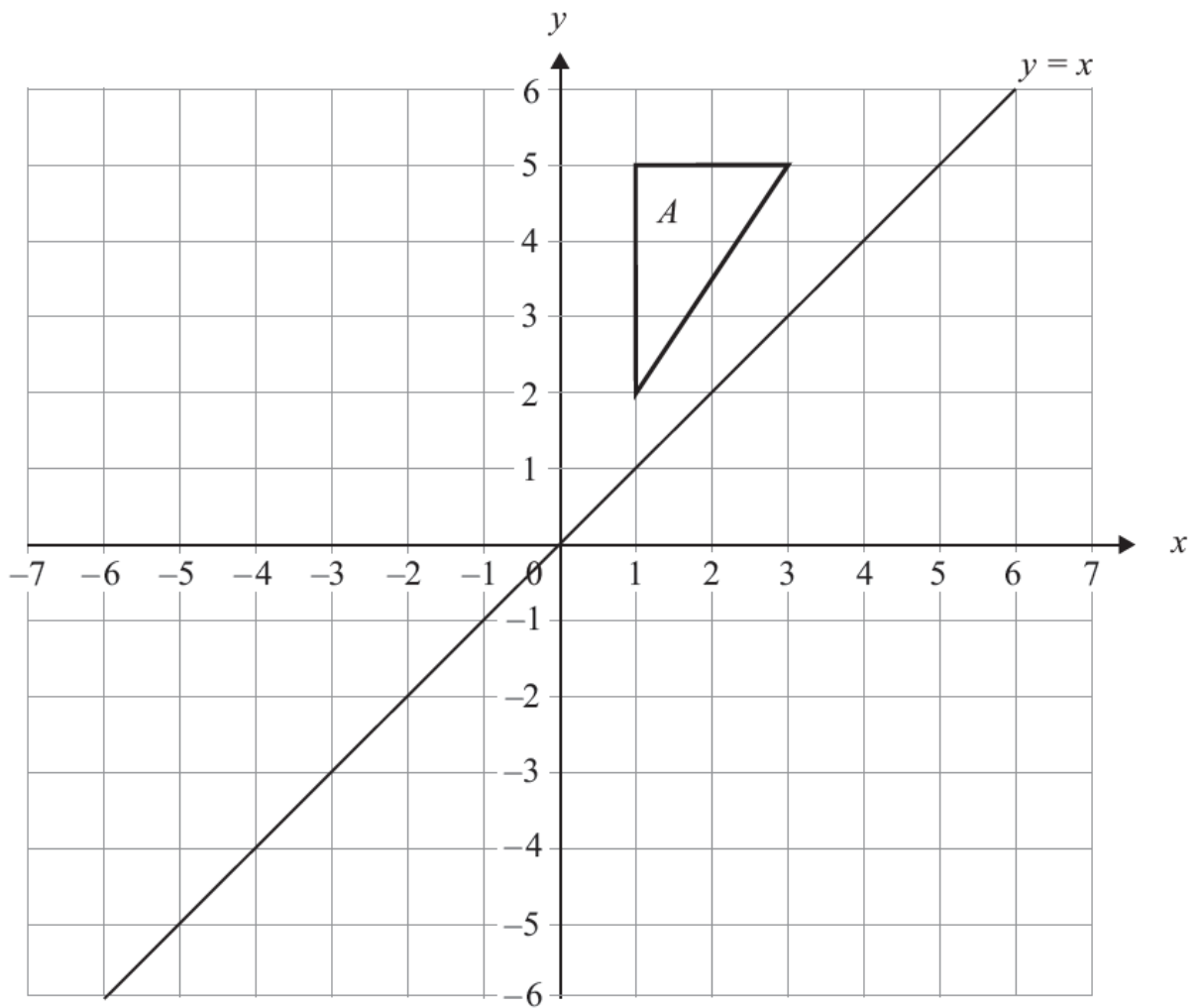
[1]

24 The graph of  $2x + 4y = 15$  is a straight line.

Work out the gradient of the line.

..... [1]

25 The diagram shows a triangle,  $A$ , and the line,  $y = x$ , drawn on a grid.



Triangle  $A$  is reflected in the line  $y = x$ .  
The **new** triangle is then reflected in the  $y$ -axis.

Describe fully the **single** transformation which maps triangle  $A$  to its final position.

.....  
..... [2]