Year 8 Mathematics Examination
SEMESTER 2 2016
QUESTION AND ANSWER BOOKLET

STUDENT NAME:
TEACHER:
DATE:

TIME ALLOWED FOR THIS PAPER
Reading time before commencing work:10 minutes
Working time for this paper: 90 minutes

MATERIAL TO BE PROVIDED BY THE SUPERVISOR
• This Question/Answer Booklet

MATERIAL TO BE PROVIDED BY THE CANDIDATE
• Pen/pencil for answering questions.
• Erasing stationery.
• Up to two scientific calculators.
• Written notes on **one** unfolded A4 sized paper; can be double-sided.

TOTAL QUESTIONS: 55
TOTAL MARKS: 65

Section 1:

NON-CALCULATOR

27 questions, 31 marks

Attempt questions 1 - 27

Section 2:

CALCULATOR

28 questions, 34 marks

Attempt questions 1 - 28

AT THE END OF THE EXAMINATION
Attach any extra sheets used to this Question/Answer booklet.

1   Simplify $3xy - 44y - 3xy + 5y$

   $-39y$ $39y$ $xy + 39y$ $6xy - 39y$
   ○   ○   ○   ○

2   What is the perimeter of this composite shape?

   4 m

   6 m   Not to scale

   3 m

   7 m

   20 m   23 m   26 m   30 m
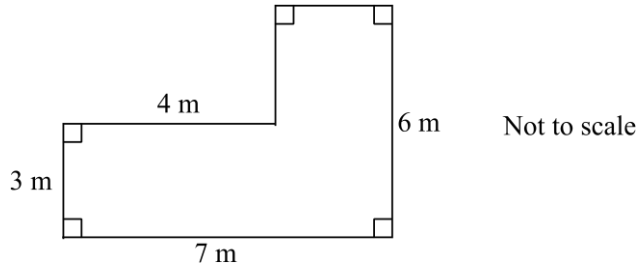   ○   ○   ○   ○

3   Simplify $3x^2 \times 8xy$

   $24xy$ $24x^3y$ $38xy$ $38x^3y$
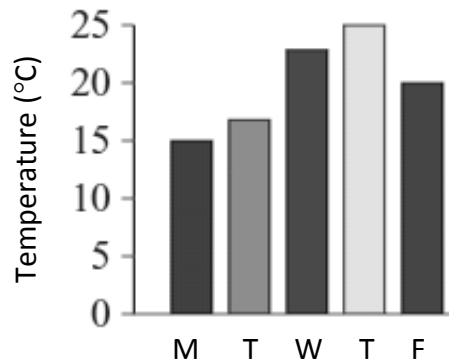   ○   ○   ○   ○

4   A Year 8 Science class is studying weather and climate. They measure the temperature every day for five days. The results are shown in the column graph below.

   On which day did they record the highest temperature?

   Monday   Tuesday   Wednesday   Thursday
   ○   ○   ○   ○

5 Solve $2a + 8 = 40$

$a = 15$ $a = 16$ $a = 24$ $a = 30$
○   ○   ○   ○

6 Anne and her friends decided to watch a DVD. They started it at 8.30 pm and it ran for 105 minutes. At what time did the DVD end?

9:30pm   9:35pm   10:05pm   10:15pm
○   ○   ○   ○

7 In the expression $7a - 2ab - b + 4b^2$, the coefficient of b is:

-2   4   -1   1
○   ○   ○   ○

8 Which of the following pairs are like terms?

$4pq^2$ and $7q^2p$ x^2yz^3 and $5xy^2z^3$ $8st^2$ and $-9s^2t$ $10a$ and $-8a^2$
○   ○   ○   ○

9 Sixteen students were surveyed to find the number of televisions in their home.
The following raw data was collected: 1, 1, 2, 2, 3, 1, 2, 0, 2, 2, 2, 3, 1, 0, 3, 2.

The score with the highest frequency (mode) is:

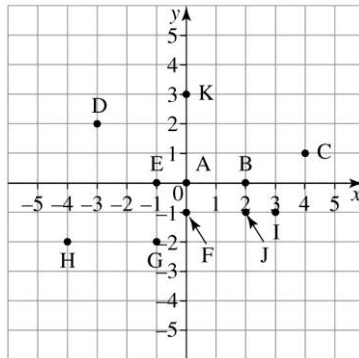0   1   2   3
○   ○   ○   ○

10 The expression $\dfrac{x+3}{5}$ can be expressed in words as:

○   three times *x* divided by five

○   *x* plus 3 fifths

○   one fifth of 3 more than *x*

○   one fifth of *x*, plus 3

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11 The coordinate for the point D on the Cartesian plane below is:

(3,2)   (3,-2)   (-3,-2)   (-3,2)
○   ○   ○   ○

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12 Which of the following expressions can be simplified further by combining like terms?

8 − *b* + *a*   9*a* + *ab* − 5   6*ab* + 4*b* − *ba*   8*a* + 2*b* − 6 + 9*ab*
○   ○   ○   ○

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13 A school committee conducted a survey to find out whether teachers would prefer to start the school day 30 minutes later. Only teachers with children in preschool were surveyed. Why might the results of this survey NOT be a valid representation of what all the teachers at the school would prefer?

○   The student population was not surveyed.

○   Only about 75% of the teachers surveyed preferred to start the school day later.

○   The survey did not ask teachers whether their spouses worked.

○   The survey was not conducted using a random sample of teachers.

14 The number *n* is tripled and then subtracted from 17 and the result is 5.
An equation that represents this is:

$17 - 3n = 5$ $3(n - 17) = 5$ $3n - 17 = 5$ $3(17 - n) = 5$

○   ○   ○   ○

15 A sample of students from a school is to be selected at random to complete an investigation. Which of the following is an example of choosing this sample randomly?

○   Choosing students queuing at the tuckshop.

○   Assigning numbers to a list of student names and using a random number table to select random numbers.

○   Calling for volunteers.

○   Choosing the girls in an all-girls science class.
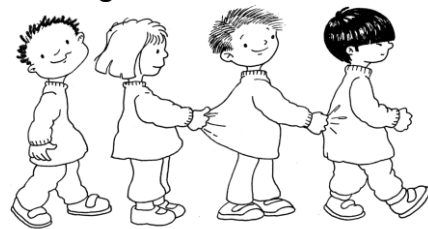
16 Which of the following equations does not have the solution *x* = 6?

$8x = 48$ $\dfrac{x}{3} = 2$ $x + 6 = 0$ $15 - x = 9$

○   ○   ○   ○

17 When solving the equation $\dfrac{5x + 6}{4} = 7$, which step is performed first?

○   subtracting 6 from both sides

○   multiplying both sides by 4

○   dividing both sides by 5

○   adding 9 to both sides

18 The linear relationship described by subtracting 5 from the *x*-value is:
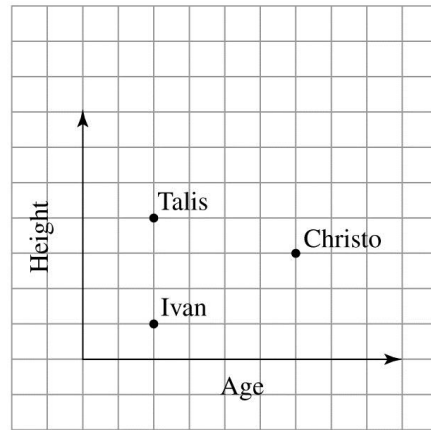
$y = x - 5$ $y = 5x$ $y = 5 - x$ $y - 5 = x$
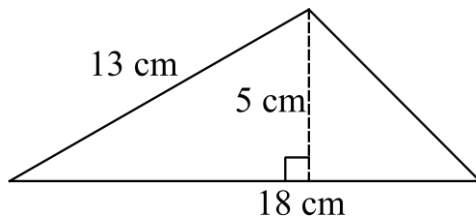
○   ○   ○   ○

19 Who is the eldest of the three children shown?

20 Determine the area of the following triangle.

Not to scale

13 cm

5 cm

18 cm

21 The highest common factor of $16r^2st$ and $24rs^2t$ is:

$8rst$	$4rs^2t$	$2r^2s^2t$	$8r^2st$
○	○	○	○

22 What is the value of $2(x+4)$ if $x=-1$?

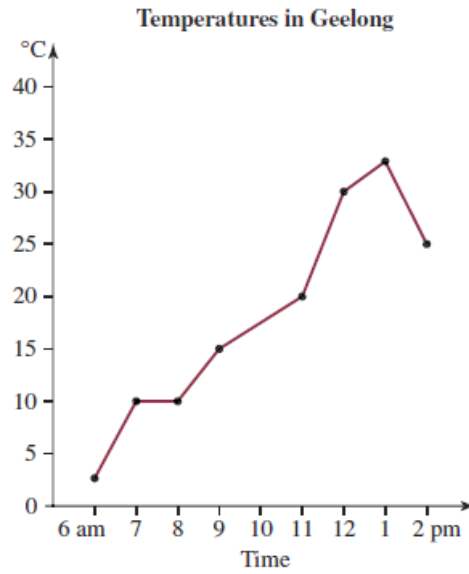| -10	-8	3	6
○	○	○	○

23 The area of a square is 9 cm². If its dimensions are doubled, what is the area now?

24 In the graph below, when was the biggest change in temperature?

Temperatures in Geelong

25 Simplify $6x^2 + 3x + 2x - x^2$.

26 The point where a linear graph crosses the y axis is called the:

origin ○   *y* intercept ○   gradient ○   *x* intercept ○

27 The expanded version of the expression $3(4x - 3)$ is:
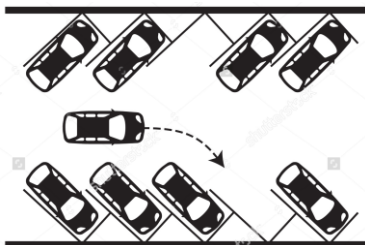
$12x - 3$ ○ $12x - 9$ ○ $7x - 6$ ○ $34x - 3$ ○

STOP – END OF TEST

1   A 900 car parking lot is divided into 3 sections. There are 330 spots in Section 1.
    Section 2 holds 160 more than will fit into Section 3. How many spots are in Section 3?

205	240	285	330
○	○	○	○

2   The diameter of a circle is 6 m. What is the area of the circle to the nearest square
    metre?

○   19 m^2 ○   28 m^2

○   38 m^2 ○   113 m^2

3   Your friend is training for a triathlon. On one training day she swam 1500 m,
    rode a bike 47 000 m and ran 14 km.
    How many kilometres were completed?

48km	57km	60km	62.5km
○	○	○	○

4   The value of $8 - xy + x^2 - 3y$ if $x = -2$ and $y = 5$ is:

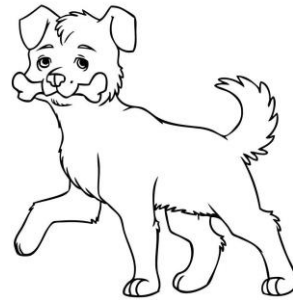|			
37	7	-1	-13
○	○	○	○

5   A frequency distribution table of the number of pets owned by students in Year 8 is shown below.

Number of pets	Frequency
0	6
1	8
2	7
3	5

The number of students surveyed is:

12	14	20	26
○	○	○	○

6   An electrician charges a $40 call-out fee and $80 per hour. On a particular job, the electrician charged $360. The electrician worked for:

2 hours	3 hours	4 hours	6 hours
○	○	○	○

7   Paul's batting scores for cricket in a season are 17, 23, 9, 0, 8, 21, 12.
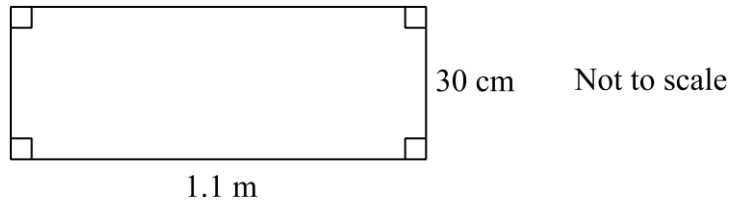
Calculate Paul's mean score to the nearest whole number.

8   If $x = 6$, $y = 4$ and $z = -1$. Evaluate $x(y^2 - z)$.

9   Calculate the area of this rectangle?

30 cm   Not to scale

1.1 m

33 m²	33,000 cm²	330 cm²	0.33 m²
○	○	○	○

10   A teacher records the following test scores out of 100 for eight of her students:

8, 47, 62, 67, 78, 82, 83, 90

The teacher then realises that the score of 8 is an error and should instead be 80.

What will this change of score have the greatest effect on?
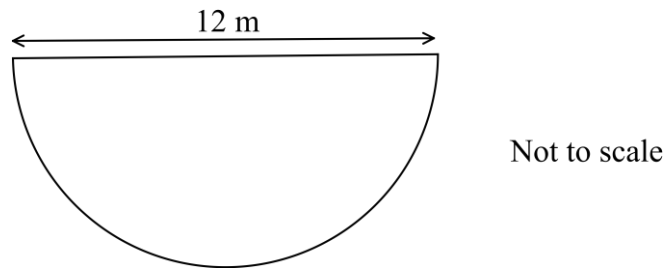
mean	median	mode	highest value
○	○	○	○

11   Calculate the perimeter of this semicircle?

12 m

Not to scale

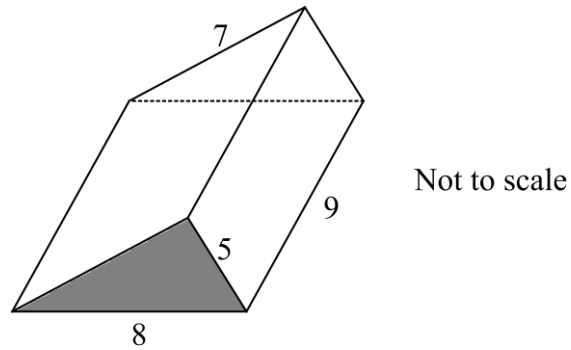| 19m	30m	31m	50m
○	○	○	○

12   Purchasing 5 bananas and a $3.50 pineapple costs the same as purchasing 7 bananas and a pear that costs 90 cents. What is the cost of each banana?

13 Solve $6m+3=51$

[ ]

14 The area of the shaded end of the triangular prism is 30 units^2.

Not to scale

The volume of the prism is:

270 units³   360 units³   504 units³   2 520 units³

○   ○   ○   ○

15 The mean of the data in this frequency table is:

Score (x)	Frequency (f)	fx
11	2	
12	5	
13	9	
14	3	
15	1	
TOTAL		

12.0   12.4   12.8   13.0

○   ○   ○   ○

16 What is the equation used to construct this table?

x	0	1	2	3
y	3	6	9	12

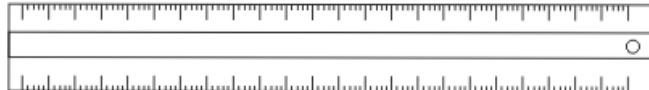$y = x + 3$
○

$y = 6x$
○

$y = x + 5$
○

$y = 3x + 3$
○

17 500 mm converted to metres is:

0.005 m
○

0.05 m
○

0.5 m
○

5 m
○

18 How much timber would be left if eleven 1.75m lengths are cut from a 22m piece of timber?

3.25m
○

2.25m
○

2.35m
○

2.75m
○

19 There is space in a multi-storey car park for 15 rows of 20 cars on each of the 8 floors. How many spaces are left if 2124 cars have already parked?

174
○

276
○

388
○

425
○

20 During the day, a patient had her temperature measured as 37.3°C, 38°C, 37.8°C and 38.5°C.
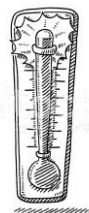
Her average temperature was:

37.8°C
○

37.9°C
○

38°C
○

38.2°C
○

13

21 At another supermarket, shopping trolleys are also 1 metre long. Your friend works collecting them and stacking them into an area. Each shopping trolley in the stack adds on 0.25 m. How many trolleys could be stacked in a single line of 10 metres?
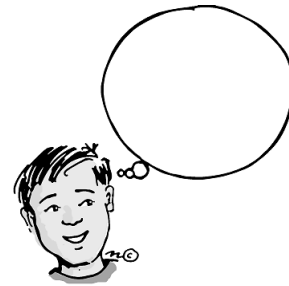
37 ○   36 ○   35 ○   34 ○

22 The mean of 3 numbers is 48. What is the third number if the first two numbers are 4 and 12?

23 A number is doubled, and then 3 is subtracted. This gives the same result as if the number were quadrupled. What is the number?

24 Three consecutive numbers add to 48. What is the largest number of the three?

15 ○   16 ○   17 ○   18 ○

25 Starting with the equation $x = 3$, which new equation results from subtracting 2 from both sides?
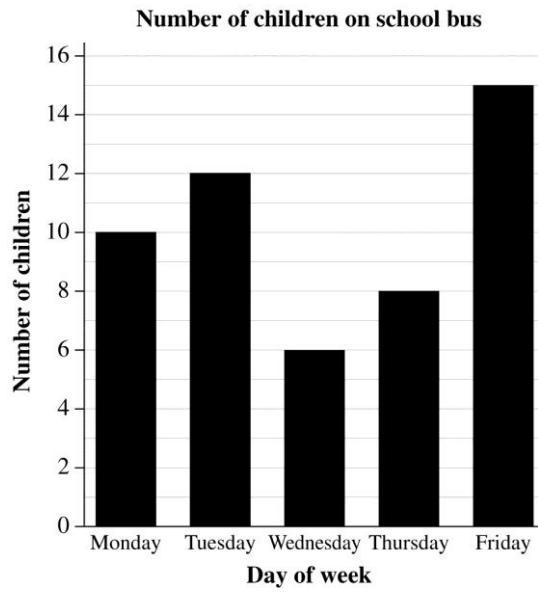
$x - 2 = 1$ ○ $x = 1$ ○ $3 - x = 3$ ○ $3 - x = 1$ ○

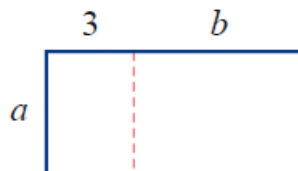26 How many more students caught the bus on Friday compared to Wednesday?

Number of children on school bus

| 6 | 7 | 8 | 9 |
| ○ | ○ | ○ | ○ |

27 An expression for the area of the following rectangle is:

| $a(b - 3)$ | $b(a + 3)$ | $3ab$ | $3a + ab$ |
| ○ | ○ | ○ | ○ |

28 A sketchbook contains 100 pieces of paper and is 14 mm thick. What is the thickness of one sheet of paper?

| 1.4mm | 10mm | 0.14mm | 1 400mm |
| ○ | ○ | ○ | ○ |

STOP – END OF TEST