

## Year 9 Term 2 Test

<b>Student Name:</b> _____	<b>Grade:</b> _____
<b>Date:</b> _____	<b>Score:</b> _____

- Answer the questions in the spaces provided on the question sheets.
- If you run out of room for an answer, continue on the back of the page.
- This test has 20 questions, for a total of 100 marks.
- Attempt all 20 questions.
- Time allowed: 45 minutes.

Page:	1	2	3	4	5	6	7	Total
Points:	12	16	14	17	16	13	12	100
Score:								

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# 11 Year 9 Term 2 Test

1. Solve each of these equations:

(a)  $\frac{1}{3}x - \frac{3}{4}(x + 2) = \frac{5}{6}x$

[4]

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(a) \_\_\_\_\_

(b)  $\frac{x+4}{x-2} = \frac{x+8}{x-3}$

[4]

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(b) \_\_\_\_\_

2. Make  $y$  the subject for the following equations:

(a)  $3(4x - 2y) = 18x - 3$

[2]

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(a) \_\_\_\_\_

(b)  $\frac{y}{y-6} = \frac{2x}{3}$

[2]

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(b) \_\_\_\_\_

3. If  $T = \frac{n}{2}[2a + (n - 1)d]$ , find T if  $a = 8$ ,  $d = 5$  and  $n = 4$ . [4]

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

3. \_\_\_\_\_

4. Solve each of the following inequations:

(a)  $2 - 4x \leq 18 - x$  [2]

\_\_\_\_\_

\_\_\_\_\_

(a) \_\_\_\_\_

(b)  $\frac{2x}{3} - \frac{x}{4} \geq 24$  [2]

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

(b) \_\_\_\_\_

5. A rectangle is to be constructed with length  $x$  cm and width  $(x-4)$  cm. The perimeter of the rectangle is to be less than 42 cm. What are the possible values for  $x$ ? [4]

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

5. \_\_\_\_\_

6. Find the area of a square whose perimeter is equal to an equilateral triangle with sides of 32 cm. [4]

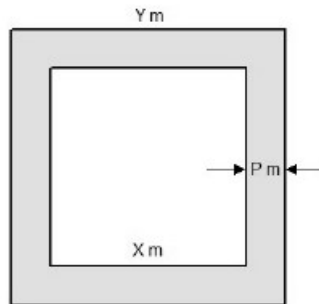
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\_\_\_\_\_

6. \_\_\_\_\_

7. Consider a square garden with sides  $x$  metres long. A path  $p$  metres wide surrounds a square area of lawn with side  $y$  metres, as shown in the figure below:



(a) Write down a formula for  $y$  in terms of  $x$  and  $p$ . [2]

\_\_\_\_\_

\_\_\_\_\_

(b) If  $x = 25$  m and  $p = 2.5$  m, find the area of the path. [4]

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

8. Convert the following units:

(a)  $2.3 \text{ L} = \text{_____ mL}$ . [2]

(a) \_\_\_\_\_

(b)  $1.5 \text{ m}^2 = \text{_____ cm}^2$ . [2]

(b) \_\_\_\_\_

(c)  $10.2 \text{ ha} = \text{_____ m}^2$ . [2]

(c) \_\_\_\_\_

(d)  $1152 \text{ kg} = \text{_____ t}$ . [2]

(d) \_\_\_\_\_

9. State the upper and lower bounds of each measurement:

(a) A mass of 6.25 kg.

[2]

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(a) \_\_\_\_\_

(b) The height of a building is 158 m, correct to nearest metre

[2]

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(b) \_\_\_\_\_

10. If a car travels at 18 m/s, what is the speed in km/h?

[4]

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10. \_\_\_\_\_

11. A rectangular water container was filled with  $4800 \text{ cm}^3$  of water to a level of 8 cm. Thirty similar marbles were put into the tank and the water level rose by 2 cm. Find the volume of each marble.

[5]

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11. \_\_\_\_\_

12. The mean of a set of 29 scores is 78. When one of the scores is taken out of the set, the new mean is then 79. Find the score that was taken out.

[4]

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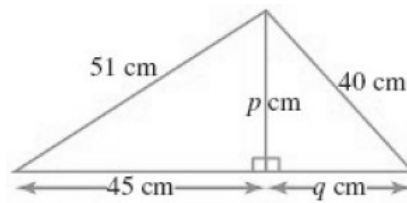
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12. \_\_\_\_\_

13. Find the values of  $p$  and  $q$ , then find the perimeter of following figure.

[4]




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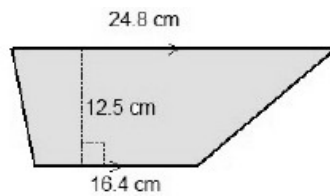


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13. \_\_\_\_\_

14. Find the area of the trapezium:

[4]




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14. \_\_\_\_\_

15. Use your calculator to find the mean and median of following set of scores, correct to 1 decimal place.

Score	1	2	3	4	5
Frequency	3	7	8	14	5

(a) mean =

[4]

(a) \_\_\_\_\_

(b) median =

[4]

(b) \_\_\_\_\_

16. A card is drawn at random from a normal deck of 52 cards. What is the probability of it being:

(a) the five of spades?

[2]

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(a) \_\_\_\_\_

(b) a red heart?

[2]

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(b) \_\_\_\_\_

17. A bag contains 12 red marbles and 12 white marbles. If two marbles are drawn at random one at a time without replacement, what is the probability of drawing two red marbles?

[4]

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17. \_\_\_\_\_

18. Simplify the following:

(a)  $\sqrt{27x} - \sqrt{12x}$

[2]

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(a) \_\_\_\_\_

(b)  $54\sqrt{20} \times 6\sqrt{5}$

[3]

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(b) \_\_\_\_\_

19. Rationalise the denominator in each of these:

(a)  $\frac{1}{\sqrt{6}-2}$

[3]

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(a) \_\_\_\_\_

(b)  $\frac{3+\sqrt{3}}{3-\sqrt{2}}$

[4]

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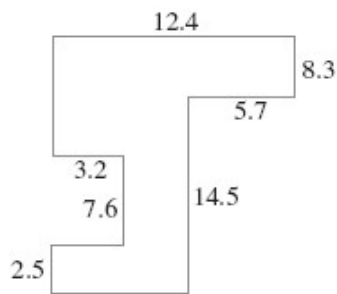


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(b) \_\_\_\_\_

20. Calculate the total perimeter of the following figure. All angles are right angles and all measurements are in cm.

[5]




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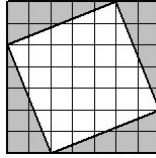
20. \_\_\_\_\_



### 11.1 Math challenge

#### Exercise 11.1.1

1. What is the ratio of the shaded to the unshaded area in the diagram shown below:




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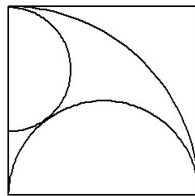


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2. The diameter of the large semicircle and the radius of the quadrant are both 2 units. Find the radius of the smallest semicircle.




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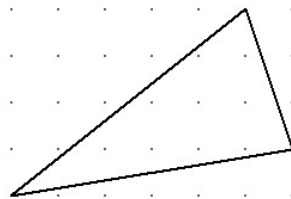


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3. Consider the triangle in the diagram is made on a 1 cm dot paper. Find the area of the triangle in square centimetres.




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