

Year 8 Term 2 Homework

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| Student Name: _____ | Grade: _____ |
| Date: _____ | Score: _____ |

Table of contents

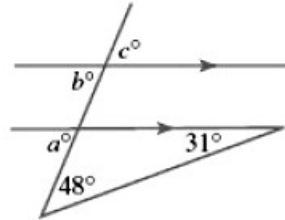
| | |
|---|----------|
| 9 Year 8 Term 2 Week 9 Homework | 1 |
| 9.1 Topic 1 — Angles and Geometric Figures | 1 |
| 9.2 Topic 2 — Area and Volume | 2 |
| 9.2.1 Area of squares, rectangles and triangles | 2 |
| 9.3 Miscellaneous Exercises | 4 |
| 9.4 Maths challenge | 10 |

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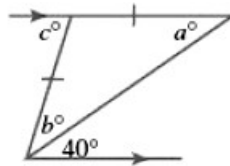
9 Year 8 Term 2 Week 9 Homework

9.1 Topic 1 — Angles and Geometric Figures

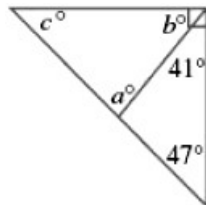
Exercise 9.1.1 Find the values of a , b and c in each of these figures:



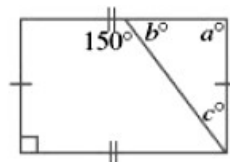
1. $a =$ _____ , $b =$ _____ , $c =$ _____ .



2. $a =$ _____ , $b =$ _____ , $c =$ _____ .



3. $a =$ _____ , $b =$ _____ , $c =$ _____ .



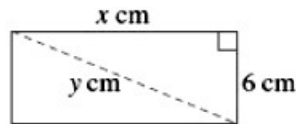
4. $a =$ _____ , $b =$ _____ , $c =$ _____ .

9.2 Topic 2 — Area and Volume

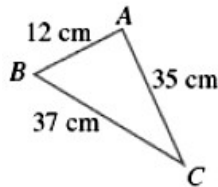
9.2.1 Area of squares, rectangles and triangles

Exercise 9.2.1

1. The width of this rectangle is 6 cm and the area is 48 cm^2 .

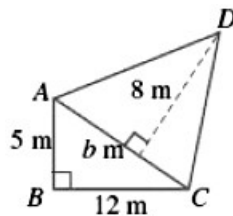


- (a) Find the length of the rectangle. _____
- (b) Hence find the length of the diagonal. _____
2. For the triangle given below:



- (a) Prove the $\triangle ABC$ is a right-angled triangle.

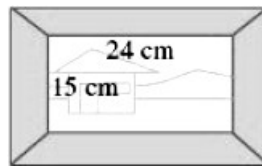
- (b) Which angle is the right angle? _____
- (c) Find the area of $\triangle ABC$ _____
3. For the figure given below:



1. Find the value of b . _____
2. Find the total area of the quadrilateral ABCD.

Exercise 9.2.2 Further applications

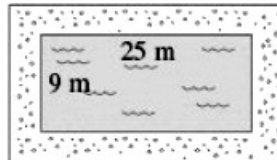
1. A painting measures 24 cm by 15 cm and is surrounded by a wooden frame of width 4 cm.



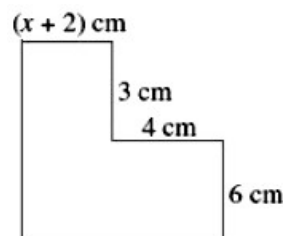
(a) Hence calculate the wall space that the painting will occupy when it is hung in a an art gallery.

(b) Find the area of the wooden frame.

2. A rectangular swimming pool measuring 25 m by 9 m is surrounded by a pebble path with a uniform width of 1.5 m. Find the area of the path, and hence calculate the cost of the path if the pebbles cost \$24 per m^2 .



3. The figure shown below has an area of 132 cm^2 . Find the value of x .



9.3 Miscellaneous Exercises

Exercise 9.3.1

1. During the big drought of 2006, Daniel reduced the number of sheep on his property from 4500 to 1400.

(a) What was the percentage decrease? (answer to 2 decimal places)

(b) By the end of 2007 the better season enabled Daniel to increase his number of sheep by 30% from the lower level in 2006. How many sheep did he have by the end of 2007?

2. Jessica is presently being paid \$1204 per fortnight. If she is to receive a pay rise of 5%, what will be her new weekly pay?

3. In a bag of forty marbles, there were 8 black, 7 red, 6 green, 5 pink and 6 white while the rest were yellow.

(a) What percentage of the marbles were yellow?

(b) If all the black marbles are lost, what percentage of the remaining marbles are yellow?

4. When Cathy sold her house for \$720,000 she had made a profit of 25% on the price she had paid when she purchased the house six years ago. What price had she paid when she bought the house?

Exercise 9.3.2

1. A group of fifty students in Year 8 were surveyed regarding the number of televisions in their homes. The results are shown below:

| | | | | | | |
|-----------------------|---|----|----|---|---|---|
| Number of televisions | 0 | 1 | 2 | 3 | 4 | 5 |
| Number of students | 1 | 14 | 18 | 9 | 6 | 2 |

- (a) What percentage of the students had two televisions at home?

- (b) What percentage of the students had more than three televisions at home?

2. The formula $A = \sqrt{s(s-a)(s-b)(s-c)}$ is known as Heron's Rule. It can be used to calculate the area of a triangle with sides of length a , b , and c , where $s = \frac{a+b+c}{2}$.

- (a) Find the area of a triangle with sides 5 cm, 6 cm and 7 cm.

- (b) Find the area of a triangle with sides 6 cm, 8 cm and 10 cm.

3. Mary paid \$44.25 for a taxi fare from the hotel to the airport. The cab charged \$2.25 for the first kilometre plus \$3.50 for each additional kilometre. How many kilometres was it from the hotel to the airport?

4. Every month, Linda buys pizzas to serve at a party for her friends. In May she bought three more than twice the number of pizzas she bought in April. If Linda bought 15 pizzas in May, how many pizzas did she buy in April?

Exercise 9.3.3 Simplify the following expressions:

1. $12x^3y^6 \div 3x^2y^4 \times 4xy$

2. $8x^3y^2 \times 3x^2y^5 \div 6xy^3$

3. $\frac{3x}{2} + \frac{x}{5}$

4. $\frac{4y}{5} - \frac{3y}{4}$

5. $\frac{3a}{4b} \times \frac{2b^2}{a}$

6. $\frac{14a}{b^2} \div \frac{12a^2}{3b}$

7. $(2a^2 \times 3b^3)^2$

Exercise 9.3.4 Expand and simplify the following expressions:

1. $3(a + 4) - 2(a + 3)$

2. $4(3x - 3) + 3(x - 1)$

3. $\frac{x+2}{2} + \frac{x-3}{3}$

4. $\frac{5y-4}{4} - \frac{3y-5}{5}$

5. $\frac{5z-7}{3} - \frac{2z-5}{6}$

Exercise 9.3.5 Factorise:

1. $5x^3 + 25x^2$

2. $5y^2 + 20y + 20$

3. $4a^2 - b^2$

Exercise 9.3.6

1. If $x = 4$ and $y = -2$, find the value of $\frac{1}{2}xy^2$

2. The measures of two consecutive angles of a parallelogram are in the ratio of 5:4. What is the measure of an obtuse angle of the parallelogram?

3. Jessica has four different flags that she wants to hang on the wall of her room. How many different ways can the flags be arranged in a row?

4. What is the value of w in the equation $\frac{3}{4}w + 8 = \frac{1}{3}$?

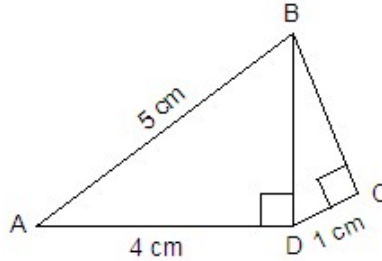
5. In the next Olympics, the United States can enter four athletes in the diving competition. How many different teams of four divers can be selected from a group of nine divers?

6. In a certain school, there are 60 students in Year 8. If 25 of these students take art only, 18 take music only and 9 do not take either art or music, how many students take both art and music?

7. Running at a constant speed, Andrew covers 15 kilometres in $2\frac{1}{2}$ hours. At this speed, how many minutes will it take him to run 2 kilometres?

Exercise 9.3.7

1. In the accompanying diagram of right triangles ABC and DBC , $AB = 5$ cm, $AD = 4$ cm and $CD = 1$ cm. Find the length of BC , answer to 2 decimal places.



2. John plans to install a fence around the perimeter of his yard. His yard is shaped like a square and has an area of 4000 m^2 . The company that he hires charges $\$12.50$ per metre for the fencing and $\$250$ for the installation fee. What will be the cost of the fence?(correct to dollars)

3. The base of an isosceles triangle is 5 and its perimeter is 13. The base of a similar isosceles triangle is 10. What is the perimeter of the larger triangle?

4. George tossed a fair coin five times and got five heads. The probability that the next toss will be a tail is:

A. 0 B. $\frac{1}{6}$ C. $\frac{1}{2}$ D. $\frac{5}{6}$

5. A set of five quadrilaterals consists of a square, a rhombus, and rectangle, an isosceles trapezoid, and a parallelogram. Kevin selects one of these figures at random. What is the probability that both pairs of the figure's opposite sides are parallel?

A. $\frac{2}{5}$ B. $\frac{4}{5}$ C. $\frac{3}{4}$ D. 1

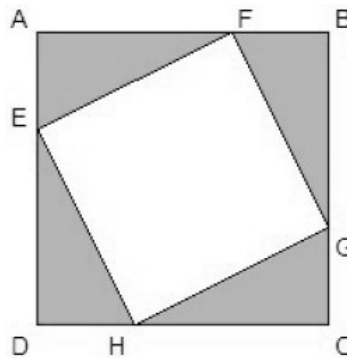
9.4 Maths challenge

Exercise 9.4.1

1. What is the product of $(c + 8)$ and $(c - 5)$?

2. If the length of a rectangular television screen is 20 inches and its height is 15 inches, what is the length of its diagonal in inches?

3. $ABCD$ and $EFGH$ are squares. If $AF = 2 \times FB$ and $AF = BG = CH = DE = 2$ cm. Find the shaded area and hence find the ratio of unshaded area to the large square.



4. If the size of a larger square is three times the small square, what is the ratio of the area of these squares.

5. If $c = 2m + d$, then m is equal to:

A. $c - \frac{d}{2}$ B. $\frac{c}{2} - d$ C. $d - 2c$ D. $\frac{c-d}{2}$