

Year 8 Term 1 Math Homework

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

Table of contents

7	Year 8 Term 1 Week 7 Homework	1
7.1	Topic 1 — Algebra	1
	7.1.1 The four operations with algebraic expressions	1
7.2	Topic 2 — Pythagoras' Theorem	5
	7.2.1 Further Application using Pythagoras' Theorem	6
7.3	Miscellaneous Exercise	7

This edition was printed on January 13, 2012.

Camera ready copy was prepared with the **L^AT_EX₂**ε**** typesetting system.

Copyright © 2000 - 2012 Yimin Math Centre (www.yiminmathcentre.com)

7 Year 8 Term 1 Week 7 Homework

7.1 Topic 1 — Algebra

7.1.1 The four operations with algebraic expressions

Example 7.1.1 Simplify each of the following expressions:

1. $36mn \div 4m \times 8n = \frac{36mn \times 8n}{4m} = 72n^2$

2. $(18t - 4 \times 3t - 2t) \div 2t = \frac{18t - 12t - 2t}{2t} = 2$

Exercise 7.1.1 Simplify each expression by working from left to right.

1. $72xy \div 9y \times 4x =$ _____

2. $60gh^2 \div 12g \div 5h =$ _____

3. $45x \div 5x^2 \div 3 =$ _____

4. $35xy \div 7x \times 3y =$ _____

5. $36uv \div 3u \div 4v =$ _____

6. $\frac{p^{16}}{p^2 \times p^6} =$ _____

Exercise 7.1.2 Factorise the following expressions:

1. $35x^2y - 7xy + 14xy^2 =$ _____

2. $b(b + 4) - (b + 4) =$ _____

3. $x - 6 + x(x - 6) =$ _____

4. $5as^{12} + 25s^6 =$ _____

5. $5(a - 3) + 3(a - 3) =$ _____

6. $16a + 12b - 8c + 4d =$ _____

7. $a^2 + 2ab + b^2 =$ _____

Exercise 7.1.3 Simplify the following algebraic fractions:

1. $\frac{5y-3}{4} + \frac{4y-5}{5} =$ _____

2. $\frac{b+4}{6} - \frac{b-4}{8} =$ _____

3. $\frac{3a}{4b} \times \frac{5c}{6d} =$ _____

4. $\frac{c^2d}{48ef} \times \frac{28fg}{cd^2} =$ _____

5. $\frac{a}{bc} \div \frac{ab}{c} =$ _____

6. $\frac{a^2}{b} \div \frac{a}{bc} =$ _____

7. $\frac{44x}{77y} \div \frac{36x^2}{35y^2} =$ _____

8. $\frac{15a}{27b} \times \frac{9d}{20a} \div \frac{6c}{18b} =$ _____

Exercise 7.1.4 Further Applications

1. $\frac{3x+15}{4} \times \frac{16}{x+5} =$ _____

2. $\frac{a-3}{3} \times \frac{12}{5a-15} =$ _____

3. $\frac{4k+8}{21} \div \frac{5k+10}{7} =$ _____

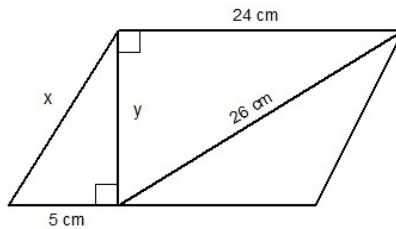
4. $\frac{x^2-4x}{12} \div \frac{xy-4y}{9} =$ _____

5. $\frac{8a}{25d} \div \frac{24b}{7d^2} \times \frac{55b}{14a} =$ _____

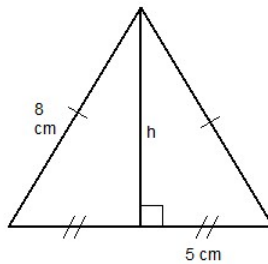
7.2 Topic 2 — Pythagoras' Theorem

Exercise 7.2.1 Find the value of the pronumerals. (answers correct to 2 d.p)

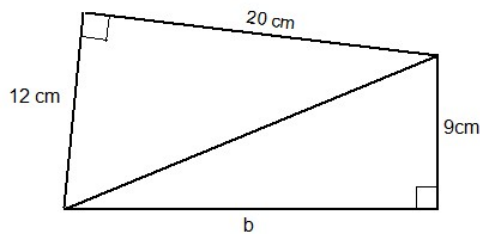
1. $x =$ _____ , $y =$ _____



2. $h =$ _____



3. $b =$ _____



7.2.1 Further Application using Pythagoras' Theorem

Exercise 7.2.2 Problem Solving

1. A boat leaves port and sails 14 nautical miles due west. It then changes course and sails 33.6 nautical miles due north. How far is the boat from the port?

2. Two trees 40 m apart are of different heights, one is 24 m tall and the other is 58 m. What is the distance between the top of the trees? (Answer correct to 1 d.p)

3. The diagonals of a rhombus are 14 cm and 48 cm. What is the length of the side of the rhombus?

4. The sides of a rectangle are so that the width is three quarters of the length. If the diagonal is 60 cm, find the length and width.

7.3 Miscellaneous Exercise

Exercise 7.3.1 Simplify each of the following expressions:

1. $(2x^3y^4)^5 =$ _____

2. $5x^2 - 6x + x^2 + x =$ _____

3. $\frac{11e-33}{5e-15} \div \frac{12e+24}{5e+10} =$ _____

4. $\frac{2m+10}{m+3} \times \frac{2m+6}{6m+30} =$ _____

5. $\frac{7b}{12} - \frac{3b}{4} =$ _____

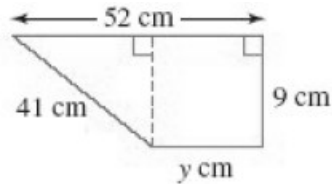
6. $a^2 \times a^4b^2 \times a^6b^4 =$ _____

7. $p^6 \div p^{12}q^2 \times p^4 =$ _____

Exercise 7.3.2 Problem solving using Pythagoras' Theorem

1. A triangular prism has a volume of 960 cm^3 . The cross section of the prism is an isosceles triangle with base 12 cm. The depth of the prism is 20 cm. Find the length of the other side of the triangular cross section.

2. Find the value of the pronumeral in the diagram below: $y =$ _____



3. An isosceles triangle ABC has been inscribed in a circle with centre O. The heights BD and OD are 32 cm and 7 cm respectively.



(a) Find the length of the radius.

(b) Calculate the length of the chord of AC.
