

Year 8 Term 3 Homework

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

Table of contents

1	Year 8 Term 3 Week 1 Homework	1
1.1	Geometric Constructions	1
1.1.1	Bisecting Angles and Intervals	1
1.1.2	Constructing Parallel and Perpendicular Lines	2
1.1.3	Orthocentre and Incentre	3
1.2	Area and Volume	4
1.2.1	Area of Squares, Rectangles and Triangles	4
1.2.2	Area of Special Quadrilaterals	5
1.2.3	Surface Area	8
1.2.4	Maths challenge	9
1.3	Miscellaneous Exercises	10

This edition was printed on September 19, 2014.

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

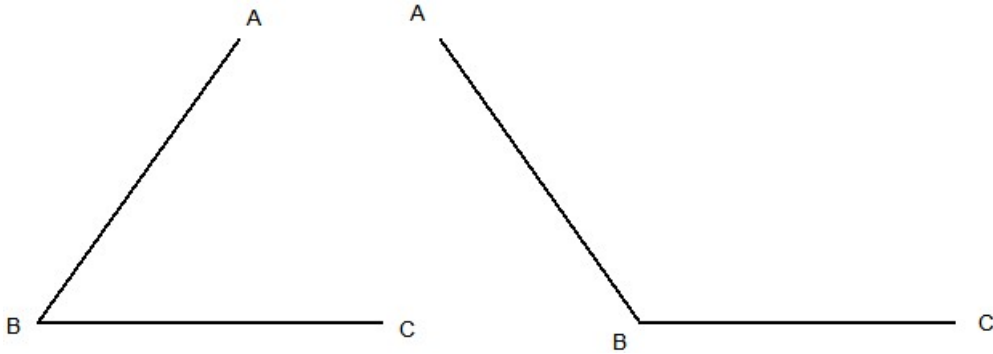
Copyright © 2000 - 2014 Yimin Math Centre (www.yiminmathcentre.com)

1 Year 8 Term 3 Week 1 Homework

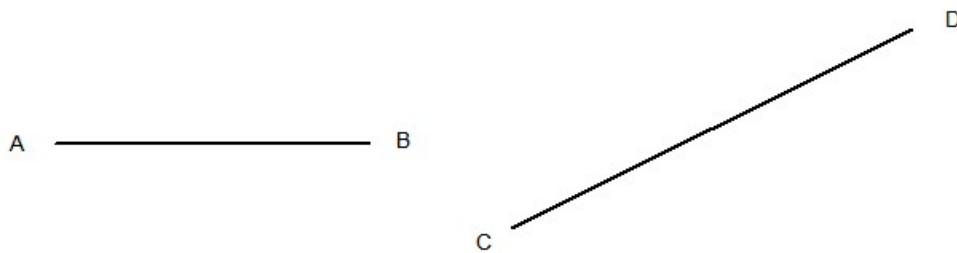
1.1 Geometric Constructions

1.1.1 Bisecting Angles and Intervals

Exercise 1.1.1 Using a compass and a ruler to bisect each of the following angles.



Exercise 1.1.2 Using a compass and a ruler to bisect each of the following line segments.



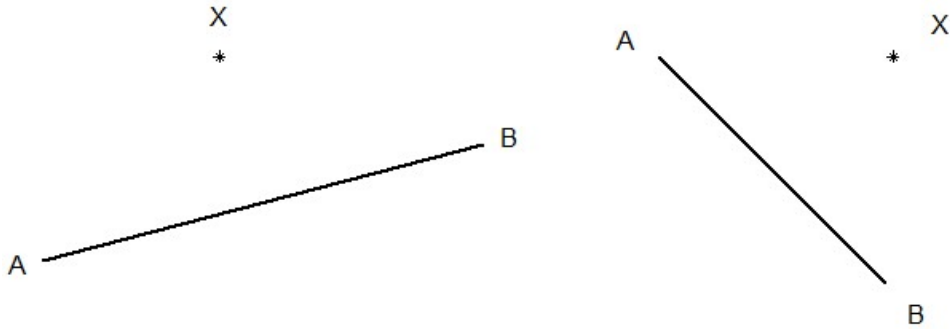
Exercise 1.1.3 Construct the following angles by using only a ruler and a compass: 60° and 120°



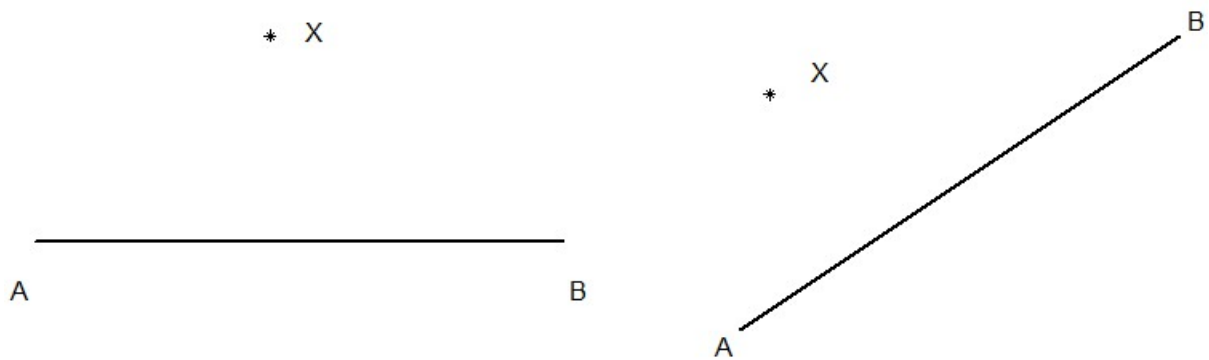
1.1.2 Constructing Parallel and Perpendicular Lines

Exercise 1.1.4

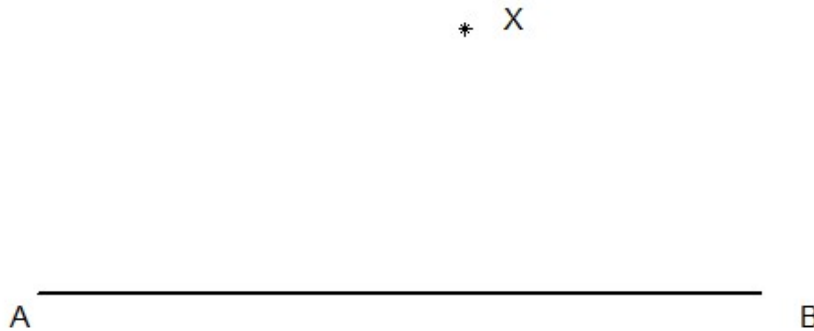
1. Using a compass and a ruler construct a line parallel to AB that passes through x .



2. Using a compass and a ruler construct a line perpendicular to AB that passes through x .

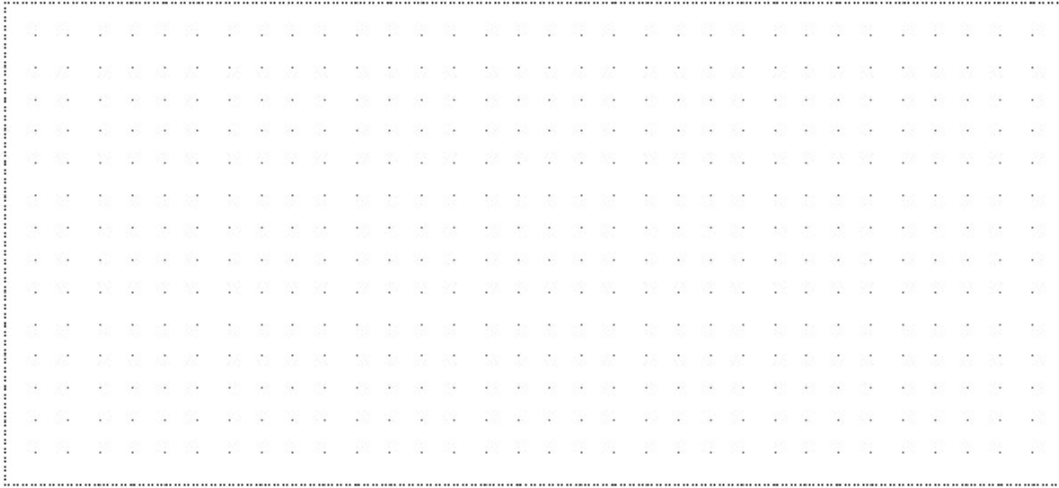


3. Using a compass and a ruler construct a line CD which parallel to AB and passes through x and a line PQ which perpendicular to AB and also passes through X .



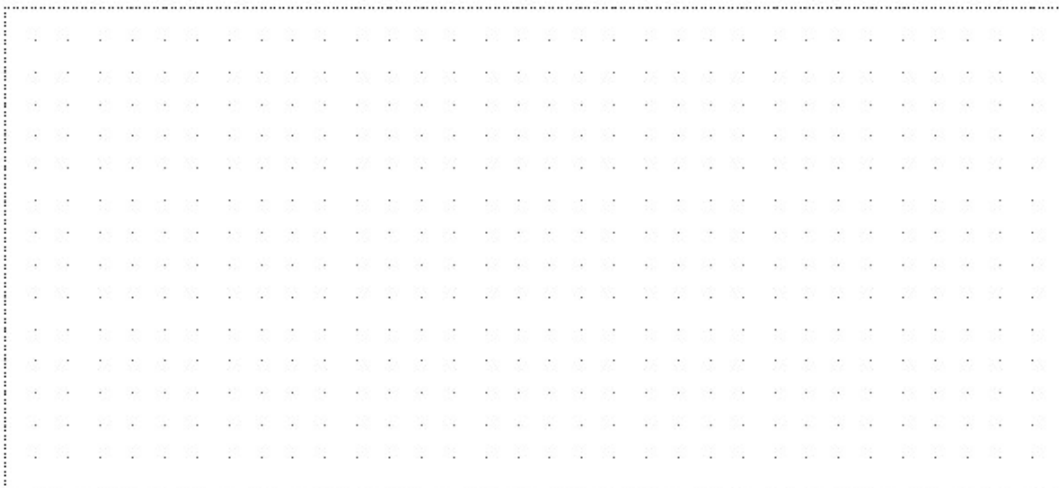
4. Construct a quadrilateral by following the instructions:

- Draw an interval PQ 6 cm long.
- Construct a 60° angle at P and mark off PS , 3 cm long.
- Construct a line parallel to PQ that passes through S and mark off RS , 3.5 cm long.
- Join QR to form a quadrilateral.



1.1.3 Orthocentre and Incentre

- Draw an acute-angled triangle.
- Construct a perpendicular for each side so that it passes through the opposite vertex. This line is called the altitude and the point of intersection of 3 altitudes is called the orthocentre.
- Draw another triangle and find the angle bisectors of the triangle.
- The intersection of these 3 bisectors is called incentre.

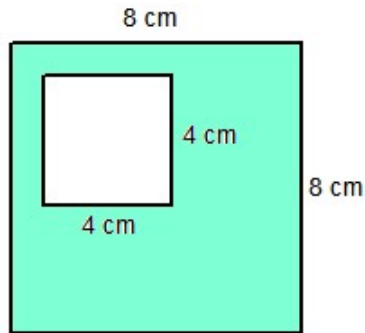


1.2 Area and Volume

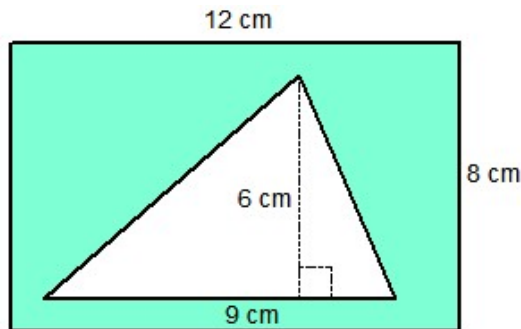
1.2.1 Area of Squares, Rectangles and Triangles

Exercise 1.2.1 Find the shaded areas of the following figures:

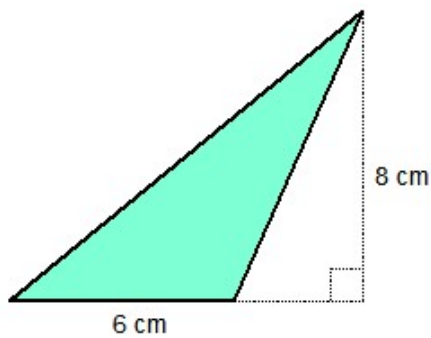
1. Area = _____



2. Area = _____



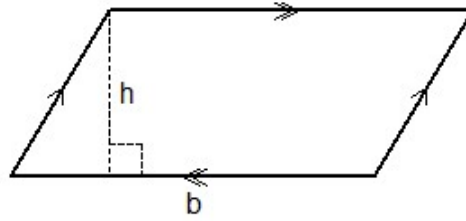
3. Area = _____



1.2.2 Area of Special Quadrilaterals

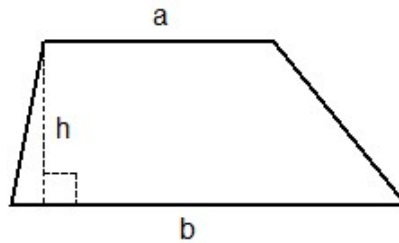
- The area of the parallelogram can be found by using the formula:

$$A = bh$$



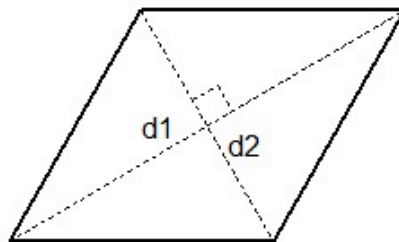
- The area of a trapezium can be found by using the formula:

$$A = \frac{1}{2} (a + b) \times h$$



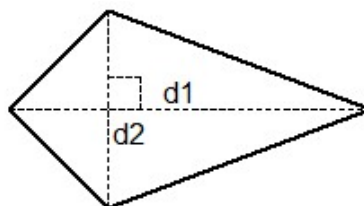
- The area of a rhombus can be found by using the formula:

$$A = \frac{1}{2} \times d1 \times d2$$



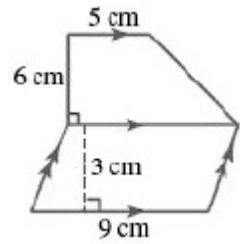
- The area of a kite can be found by using the formula:

$$A = \frac{1}{2} \times d1 \times d2$$



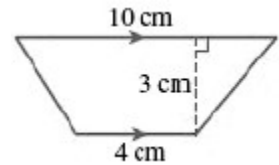
Exercise 1.2.2

1. Find the area of the figure given below:



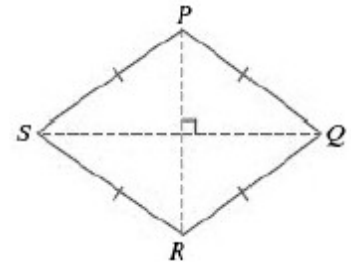
Area = _____

2. Find the area of the figure given below:



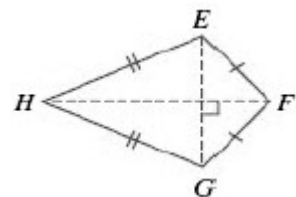
Area = _____

3. Find the area of the figure given below if $SQ = 18$ cm and $PR = 14$ cm.



Area = _____

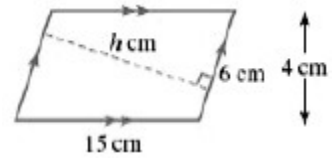
4. Find the area of the figure given below $HF = 12$ cm and $EG = 8$ cm.



Area = _____

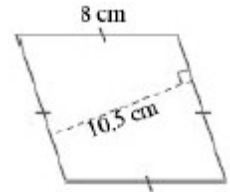
Exercise 1.2.3

1. Find the value of h for the given diagram:



$h =$ _____

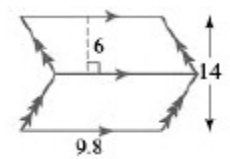
2. Explain why a rhombus is also a parallelogram, hence find the area of this rhombus by using the formula $A = b \times h$.



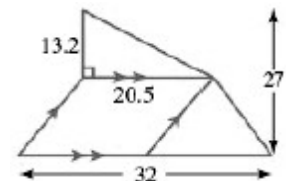
$A =$ _____

Exercise 1.2.4 Find the total area of each composite figure shown below: (All measurements are in metres.)

1. $A =$ _____



2. $A =$ _____

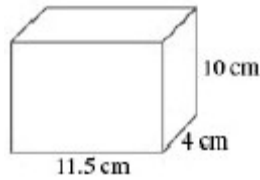


1.2.3 Surface Area

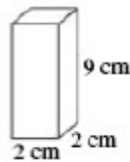
The surface of a solid with plane faces is the sum of the areas of these faces.

Exercise 1.2.5 Find the surface areas of the following solids:

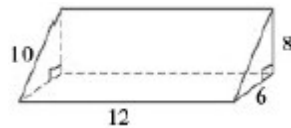
1. $A =$ _____



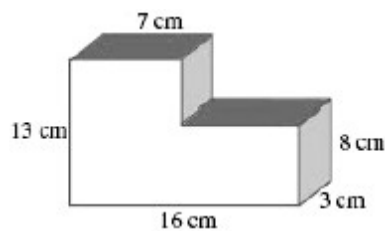
2. $A =$ _____



3. $A =$ _____



4. $A =$ _____

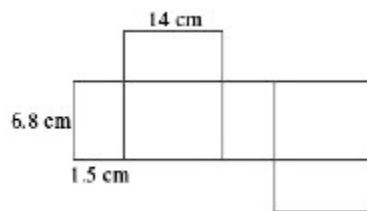


1.2.4 Maths challenge

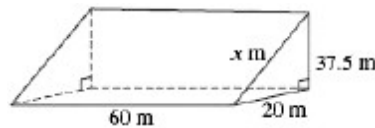
Exercise 1.2.6 Problem Solving

1. The net shown is made up of 6 rectangles.

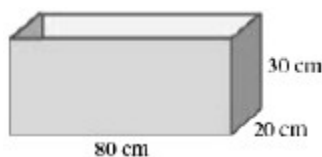
- (a) What solid would be formed by folding this net together? _____
- (b) Find the surface area of the solid with this net.



2. For the given prism find the value of x by using Pythagoras's theorem and hence find the total surface area.



3. This rectangular-shaped cardboard box is open at the top. Calculate the area of cardboard that was used to make the box.



1.3 Miscellaneous Exercises**Exercise 1.3.1 Simplify the following:**

1. $2x^3 \times 3x^2y \div \frac{4x}{9y^3}$

2. $(\frac{2x^2y}{3})^3$

3. $(\frac{3x^2y^3}{4} \times \frac{8x^3}{y^2})^2$

4. $\frac{2x}{y} + \frac{2y}{x} - \frac{x^2}{2y}$

5. $\frac{3x^3}{2y} \div \frac{x^2}{2y^2} \times \frac{y^3}{8x}$

Exercise 1.3.2

1. Simplify the following:

(a) $\frac{1}{3}(2x + y) - \frac{5}{6}x + \frac{2}{9}y$

(b) $\frac{1}{3}[4x - (6 - 5x)]$

(c) $\frac{2x-5}{3} - \frac{3x-7}{5}$

2. There are 252 marbles in a bag. If $\frac{2}{7}$ of them are red, $\frac{4}{9}$ of the remainder are green and the rest are blue, how many blue marbles are there?

3. A number is multiplied by 3 and added to 5. The result is the same as subtracting 9 from the number. Find the number.

Exercise 1.3.3

1. Solve the following:

(a) $\frac{3x+1}{4} = \frac{7x-2}{5}$

(b) $\frac{2}{x} + \frac{3}{x} = \frac{1}{12}$

2. In 2012, petrol cost \$1.20 per litre.

(a) Calculate the number of litres of petrol that could be bought for \$48.00.

(b) In 2013 the price of petrol was increased by x cents per litre. Write down an expression, in terms of x .

(c) In 2014 the price was increased by a further x cents per litre. The quantity of petrol that cost \$36.00 in 2012 now cost \$38.40. Form an equation in terms of x and solve it.
