

Year 6 Term 1 Week 8 Homework

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

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Marks:	10	10	10	15	15	10	20	10	100
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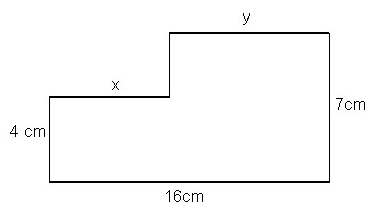
This edition was printed on October 27, 2017 with **worked solutions**.
 Camera ready copy was prepared with the **L^AT_EX²_ε** typesetting system.
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8 Year 6 Term 1 Week 8 Homework

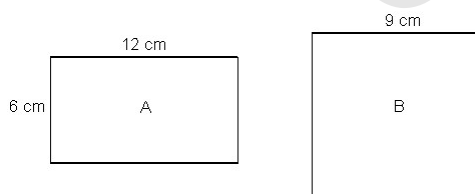
8.1 Topic 1 — Perimeter, Area and Volume

Exercise 8.1.1

1. The area of the given figure is 94 cm^2 . Find the length of x and y if all angles are right angles.



2. Find the ratio of the area of rectangle A to square B in its simplest form.



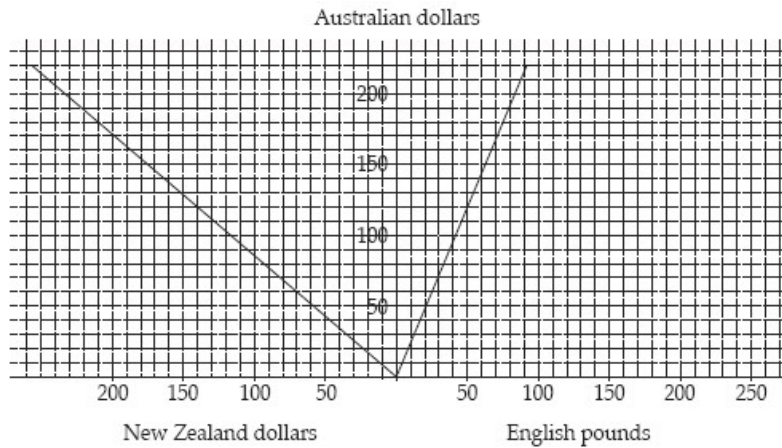
3. A fish tank is 50% full. How much water is needed to fill the tank completely, if the tank measures 24 cm by 18 cm by 15 cm?

4. A rectangular tank measures 30 cm by 25 by 15 cm. It contains water to a depth of 10 cm. How many metal cubes of edge 5 cm need to be placed in the water to raise the water level to the brim of the tank?

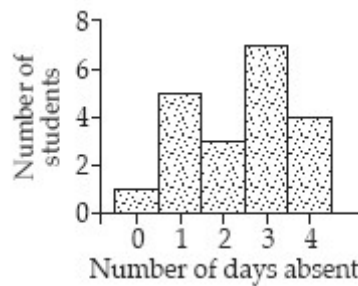
8.2 Topic 2 — Space and Graphs

Exercise 8.2.1

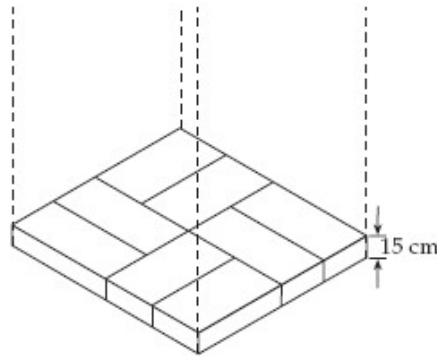
1. The graph shown below can be used to convert between Australia dollars, English pounds and New Zealand dollars. How much New Zealand dollars are equivalent to 50 pounds?



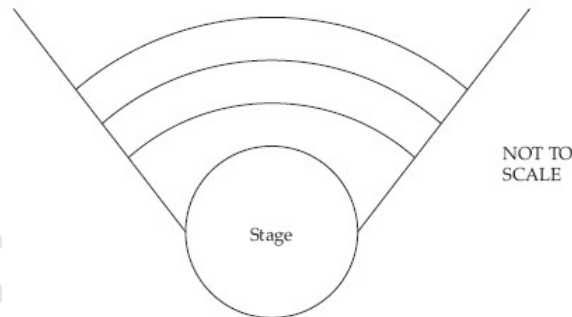
2. A teacher recorded the number of days that her students were absent. A student is chosen at random. Find the probability that this student had 3 days absent.



3. Steven wants to construct a stack of bricks 1.2 metres high. Each layer is to be like the pattern shown below in the diagram. The thickness of one layer of bricks is 15 cm. How many bricks does he need for the stack?



4. The stage of a theatre is in the shape of a circle and the seating is arranged in arcs. The first three rows of seating are shown in the diagram. The number of seats in the first row is 18 and each row has 6 more seats than the previous row.



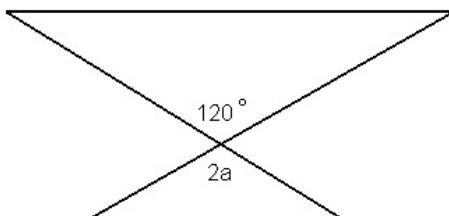
- (a) How many seats are there in the fourth row?

- (b) How many rows are there if the theatre has 252 seats altogether?

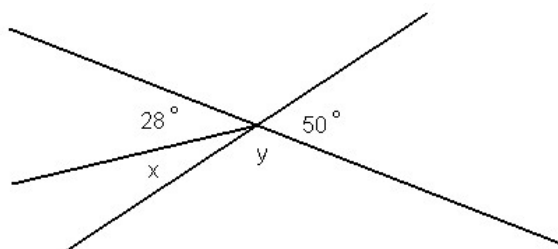
8.3 Topic 3 — Geometry

Exercise 8.3.1 Find the value of the pronumerals for the given diagrams shown below:

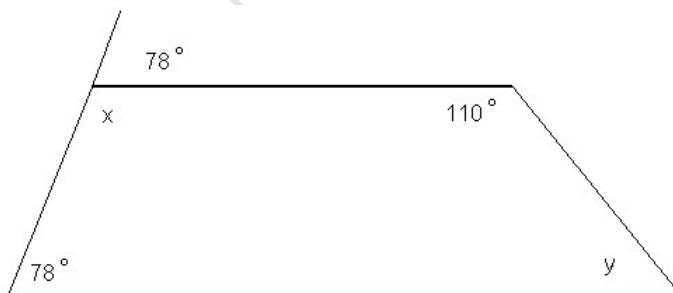
1. Answer: $a =$ _____



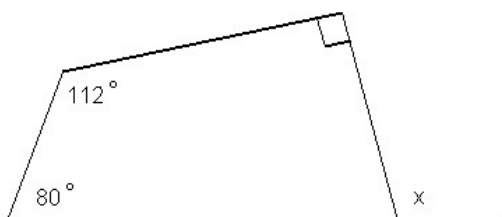
2. Answer: $x =$ _____ $y =$ _____



3. Answer: $x =$ _____ $y =$ _____



4. Answer: $x =$ _____



8.4 Topic 4 — Algebra and Equations

Algebra is the study of expressions that contain both numbers and pronumerals. In algebra the multiplication sign is normally left out:

Example 8.4.1

- $p \times q$ is written pq and $x \div y$ is written $\frac{x}{y}$
- $25 \times (2 + 8)$ is written $25(2 + 8) = 250$
- $3 \times a \times 4 \times b = 12ab$
- $2 \times a \times b \div c = \frac{2ab}{c}$

Exercise 8.4.1

1. Substituting Integers (positive and negative numbers)

If $a = 2$, $b = -3$ and $c = 4$. Find the value of the following expressions:

(a) $3a + 2b + c =$ _____

(b) $2a^2 + 3b - 4c =$ _____

(c) $\frac{2a-3b}{4c} =$ _____

2. Remove Brackets or Grouping Symbols (Multiply everything inside the brackets by the number or pronumerals outside).

If $a = 2$, $b = -3$ and $c = 4$. Find the value of the following expressions:

(a) $4(3a + 2b - c) =$ _____

(b) $3(2a + 12) =$ _____

(c) $\frac{2(3a+b)}{3(b-2c)} =$ _____

3. Adding and Subtracting in Algebra (Combine the like terms)

If $a = 2$, $b = -3$ and $c = 4$. Find the value of the following expressions:

(a) $4a + 5b + 3ab + 6b + 2a$ _____

(b) $-2a + 3b + 6a - 8b + c =$ _____

(c) $8a - 4b + 2c - 2a + 5b =$ _____

8.5 Problem Solving (Averaging)**Exercise 8.5.1**

1. The average weight of the whole class is 41.7 kg. If there are 22 boys and 18 girls in the class and the boy's average weight is 42.2 kg, find the average weight of the girls (correct to 2 decimal places).

2. Alice has 4 times as many marbles as Emma. If Alice gives Emma 48 marbles, the two girls will have an equal number of marbles. How many marbles do they have altogether?

3. The average marks of Joe and Bob was 75. Joe got 10 marks less than Bob. What is the ratio of Joe's mark to Bob's mark?

4. Of four numbers, three are $\frac{1}{2}$, $\frac{1}{3}$ and $\frac{1}{4}$. What should the fourth number be so that the average of all four numbers is $\frac{1}{2}$?

5. In three bowling games. David scores 144, 138 and 135. What scores will David need in the fourth game in order to have an average score of 145 for all four games?

8.6 Test Paper 8**8.6.1 Part A — 10 Multiple Choice Questions (1 mark each)**

1. What is the perimeter of a quarter circle with a radius of 14 cm? ($\pi = \frac{22}{7}$) [1]
(a) 50 cm (b) 25 cm (c) 22 cm (d) 44 cm
2. The sum of the values of digits '5' in 123450, 543210 and 203570 when rounded off to the nearest hundred is _____ [1]
(a) 500500 (b) 500600 (c) 500560 (d) 500650
3. 5 metres of ribbon cost \$12.50. Find the cost of 22 metres. [1]
(a) \$45.00 (b) \$55.50 (c) \$55.00 (d) \$65.50
4. There are 60 classrooms in a school. 15% of them are air-conditioned. How many classrooms are not air-conditioned? [1]
(a) 9 (b) 51 (c) 12 (d) 48
5. Find the value of $a^2 + 2a + 25$ when $a = 7$. [1]
(a) 53 (b) 65 (c) 76 (d) 88
6. Ray has 142 stickers. Alice has 12 stickers less than Ray. Bob has 12 stickers more than Ray. What is their average number of stickers? [1]
(a) 142 (b) 148 (c) 152 (d) 136
7. If $6 \times 9 + 5 = 20 + \boxed{?} \times 3$, what is the missing number in the box? [1]
(a) 11 (b) 12 (c) 13 (d) 15
8. Which one of these has the smallest value? [1]
(a) $\frac{1}{3} + \frac{5}{3}$ (b) $6 \times \frac{2}{3}$ (c) $\frac{1}{4}$ of 9 (d) $8 \div \frac{4}{3}$
9. The sum of two numbers is 14 and the sum of their squares is 100. Find the numbers. [1]
(a) 3 and 11 (b) 5 and 9 (c) 4 and 10 (d) 6 and 8
10. The product of 6 and 9 is decreased by the quotient of 8 and 2. [1]
(a) 38 (b) 52 (c) 58 (d) 50

8.6.2 Part B — 10 Average Questions (2 marks each)

11. David's age is $\frac{1}{4}$ of his father's age. His father will be 60 years old in 12 year's time. How old will [2]
David be in 24 year's time?

12. Peter has twice the amount of money of John. Adam has $1\frac{1}{2}$ times more than Peter. If the three [2]
children had \$90 altogether, how much did John have?

13. Find the average of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$ and $\frac{1}{16}$. [2]

14. If $A\triangle B = 1 + \frac{1}{A} + \frac{1}{B}$, then $(2\triangle 3) + (3\triangle 4) + (4\triangle 5) =$ _____ . [2]

15. A stretch of highway is 2478 m long and 592 trees are planted along both sides. If the trees are [2]
evenly spaced, how far apart are they?

16. Four numbers 1, 3, 5, and 7 are arranged in a patterns shown. 1, 3, 5, 7, 7, 5, 3, 1, 1, 3, 5, 7, . . . [2]
 What is the 2007th number?

17. 26 workers are needed for 15 days to complete a job. If the job must be completed in 13 days, how [2]
 many more workers are needed?

18. Alice has a piece of ribbon 2.72 metres long. She used $\frac{3}{8}$ of it to tie her hair. How many centimetres [2]
 of ribbon is left?

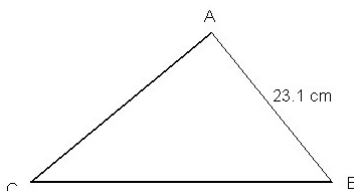
19. What is the most likely number needed to complete the following pattern? [2]

3	8	5	10	7	?
18	8	14	4	10	22

20. If we started to count from the last person, i.e. we counted in reverse alphabetical order, with what [2]
 letter would the 75th person's name begin?

8.6.3 Part C — 10 Extension Questions (3 marks each)

21. On triangle ABC, the side AB = 23.1 cm. Side AB is $\frac{3}{5}$ of side AC. Side AC is $\frac{7}{9}$ of side BC. Find [3]
the length of BC.



22. Seven men can build a garage in 108 hours. How many hours will it take nine men to build the same [3]
garage?

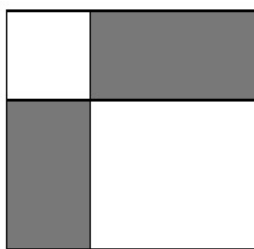
23. Three men can paint half a house in 15 days. How long will it take 5 men to paint the whole house? [3]

24. A family of 5 is posing alongside each other for a photo. If father were to stand in the centre, how [3]
many possible ways could the 5 family members stand in a line?

25. A ball bounces 80% of the height from which it was dropped. If it bounced 128 cm on the second [3]
bounce, what was the height from which it was dropped?

26. At a certain school, girls represent 23 pupils less than 56% of the total school and boys represent 8 more pupils more than 47%. How many pupils are there in the school? [3]

27. The figure shows three squares of sides 2cm, 4cm and 6cm. Find the shaded area. [3]



28. Steven is 120 cm tall. Don is $1\frac{1}{3}$ as tall as Steven. What is their combined heights? [3]

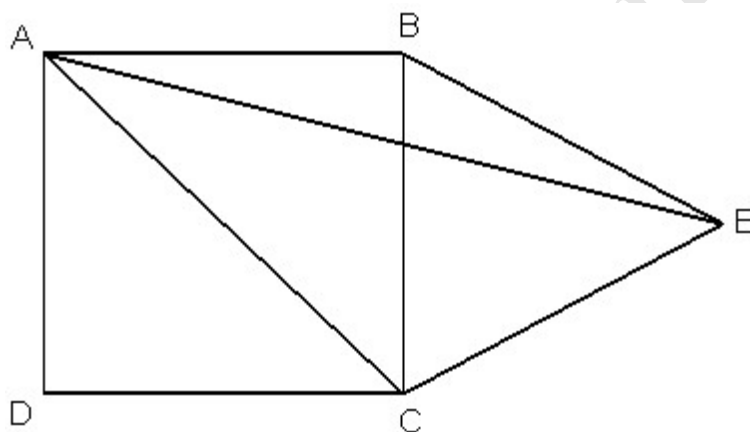
29. 3% of all the students at Ryde Primary decided to do swimming for sport. If 24 students chose swimming, how many students were in the whole school? [3]

30. There are between 70 and 80 sheep in a field. If I count them by twos there is one left over and if I count them by threes there are 2 left over. How many sheep are there? [3]

8.6.4 Part D — 8 Challenging Questions (5 marks each)

31. If a certain number is added to the denominator of $\frac{153}{215}$ the number becomes $\frac{3}{5}$. What is the number? [5]

32. In the figure shown below ABCD is a square and BCE is an equilateral triangle. Find the angle CAE [5] and angle AEB.



(a) Answer: $\angle CAE =$ _____

(b) Answer: $\angle AEB =$ _____

33. 6 people worked for 9 days to complete two fifths of a project. If 3 people joined the original 6 [5] people, how many more days were needed to complete the project?

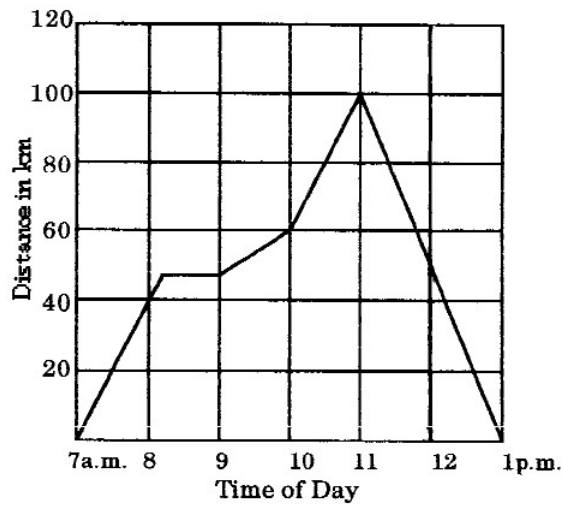
34. A water tank is to be filled using two taps, A and B. Tap A takes 12 minutes to fill the tank while tap [5] B takes 20 minutes. If the first 9 minutes is filled using tap A and rest using tap B, how much longer will it take for tap B to fill the tank?

35. 3 girls and 2 boys sit together on a park bench. If no girls wish to be separated, how many possible [5] seating arrangements can be made?

36. One garden hose can fill a pond in 8 hours, another hose can fill the same pond in 6 hours. What [5] fraction of the pond can be filled in one hour using the two hoses together?

37. $\frac{1}{3}$ of a book was read on the first day, $\frac{1}{4}$ of the book was read on the second day, $\frac{1}{5}$ of was read on the third day and 143 pages remained unread. How many pages were there in the book? [5]

38. The graph shows the journey of a motorist from his home to the city and back. Use the information given to answer the following questions:



(a) At what average speed did the motorist travel during the first hour? [1]

(b) How far from the city was he at 10 a.m? [2]

(c) What was the average speed for his return journey? [2]
