

Year 6 Term 1 Week 7 Homework

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

Table of Contents

7	Year 6 Term 1 Week 7 Homework	1
7.1	Topic 1 — Fraction, Decimal and Percentage	1
7.2	Topic 2 — Perimeter and Area	2
7.3	Topic 3 — Volume	3
7.4	Topic 4 — Space and Graphs	4
7.5	Problem Solving (Logic Challenge)	5
7.6	Test Paper 7	6
7.6.1	Part A — 10 Multiple Choice Questions (1 mark each)	6
7.6.2	Part B — 10 Average Questions (2 marks each)	7
7.6.3	Part C — 10 Extension Questions (3 marks each)	9
7.6.4	Part D — 8 Challenging Questions (5 marks each)	12

Page:	6	7	8	9	10	11	12	13	14	Total
Marks:	10	10	10	9	6	15	10	15	15	100
Score:										

This edition was printed on October 27, 2017 with **worked solutions**.
 Camera ready copy was prepared with the **L^AT_EX²_ε** typesetting system.
 Copyright © 2000 - 2017 Yimin Math Centre (www.yiminmathcentre.com)

7 Year 6 Term 1 Week 7 Homework

7.1 Topic 1 — Fraction, Decimal and Percentage

Exercise 7.1.1

- $\frac{3}{8}$ expressed as a decimal is _____
- Express $2\frac{5}{7}$ as a decimal, correct to 2 decimal places. _____
- Find the sum of $2\frac{2}{3}$, 1.75 and 0.5 and give your answer to 2 decimal places. _____
- Ray drew a line 1.4 metres long on the board. He erased $\frac{1}{2}$ metre of the line. The remaining line is _____ cm long.
- Interest of \$150 was charged on a loan of \$750 for one year. What percentage is the interest of the loan?

- In Africa, 8 out of every 10 people attend church. If 2000 people were chosen at random, how many from this group would you expect to be church attenders?

- David's petrol tank was half full but he used one third of the tank of petrol travelling to the City and back. What fraction of the tank remained?

- Taxation takes one third of Jessica's salary. She banks one fifth of what is left. If she banks \$50 every week, how much does she earn each week before tax is collected?

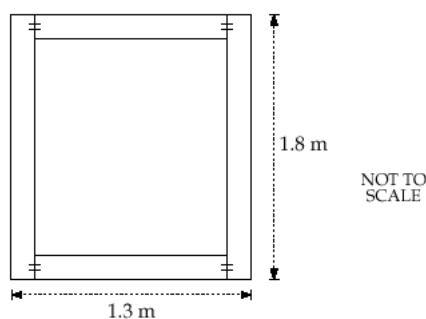
- Jennifer practiced piano for exactly the same length of time each day. After five days she had practiced for $8\frac{3}{4}$ hours altogether. How much did she practice each day?

7.2 Topic 2 — Perimeter and Area

Exercise 7.2.1

1. The perimeter of an isosceles triangle is 20 cm. The length of its two equal sides are twice as long as its base. Find the length of the base.

2. A frame is to be built with 4 joins only as shown. The timber to be used is 10 centimeters wide and is sold in 2 metre and 3 metre lengths. What lengths of the timber would you order, so that a minimum amount would be wasted?



- (a) Four 2 metre lengths (b) Three 2 metre lengths
 (c) Two 3 metre lengths (d) Two 2 metre lengths and one 3 metre lengths
3. Joe wants to buy 20 square metres of tiles. Which of the following would be the cheapest?
 (a) Tiles of size 10 cm by 10 cm at 40 cents each (b) Tiles for a total price of \$820
 (c) Tiles of size 20 cm by 20 cm at \$1.50 each (d) Tiles for \$39 per square metre
4. Linda uses gummed tape to protect the sides of a square mirror. If the area of the mirror is 100 cm², how many metres of tape will she need?

5. A square piece of paper is folded in half and then cut into two rectangles along the fold. The perimeter of each of the two rectangles is 18 cm. What was the perimeter of the original square?

7.3 Topic 3 — Volume**Exercise 7.3.1**

1. Which of the following has the greatest volume?

(a) A 2L bottle

(b) A pail that can hold 1250 cm^3 of water.

(c) A cube of size 12 cm

(d) A rectangular box 15 cm by 12 cm by 8 cm

2. A 90 cm by 50 cm rectangular tank contained 45 litres of water. What is the height of the water level?

3. The volume of a cuboid is 120 cm^3 . If its length is 6 cm and its width is 4 cm, find its total surface area.

4. A rectangular block of wood is 24 cm by 20 cm by 12 cm. It is cut into 90 equal cubes. What is the area of each face of the small cubes?

5. What must be the height of a tank in order for it to hold 9.6 litres of water if its base area is 600 cm^2 ?

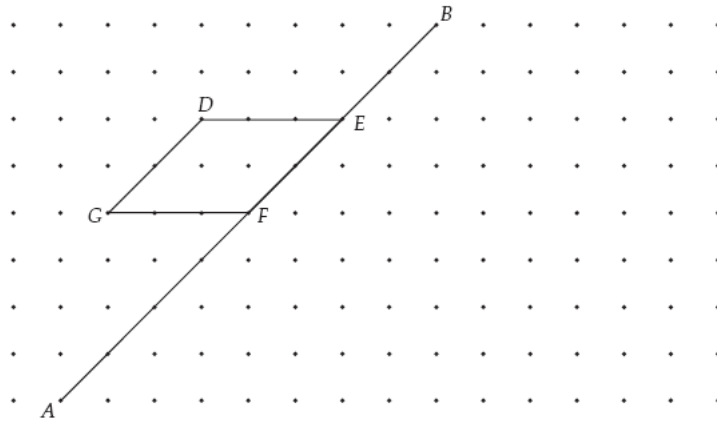
6. The volume of 20 pieces of plywood of the same size is $38,400 \text{ cm}^3$. Each is 80 cm long by 60 cm wide. If 15 of them are piled one on top of one another, what is their total height?

7. A large fish tank is 101 cm long, 40 cm wide and 50 cm high. It contains $10,000 \text{ cm}^3$ of water. How long will it take to fill up the tank if the flow rate from a tap is 6 litres per minute?

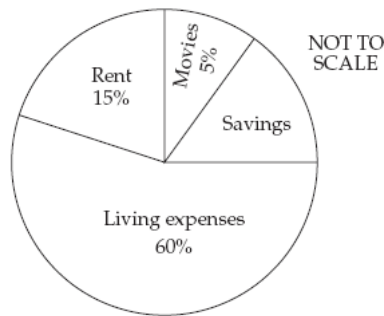
7.4 Topic 4 — Space and Graphs

Exercise 7.4.1

1. Reflect the parallelogram DEFG in the line AB.



2. Refer to the sector graph below to answer the following questions:



(a) The sector graph shows how Phil spends his weekly wage. What fraction of his weekly wage does he save? (answer in simplest form).

(b) Phil's weekly rent is \$75. Calculate his living expenses.

7.5 Problem Solving (Logic Challenge)**Exercise 7.5.1**

1. Susan, Linda, Martin and Raymond are all in a chess tournament. If each played each other once, how many games were played in all?

2. Two numbers differ by 36. They are made up of the same two digits but reversed. What are they? (can be more than one solution)

3. How many different totals can you get by throwing 2 dice?

4. Mr Red, Mr Black and Mr Grey have red, black and grey hair. None of them have hair the same colour as their name. If Mr Grey does not have black hair, what is the colour of Mr Black's hair?

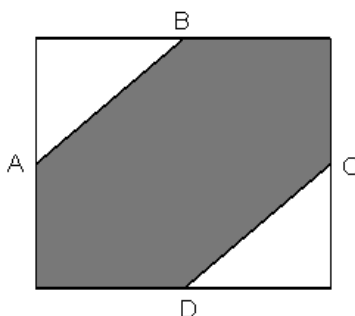
5. William decided to build his chook pen using part of his back fence as one side. Therefore, he only need to build three sides of the rectangle. With 22 metres of fencing and a 2 metre gate, what size should he make his pen to get the largest possible area inside?

6. A pastry cook sold $7Z$ pies on Saturday. He only sold 30 pies on Sunday. If he sold 128 pies over the 2 days, what is the value of Z ?

7. A chair at Ikea costs $\$Z$. How many chairs can be bought with $\$150$?

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

11. A, B, C and D are the midpoints of the sides of a rectangle 10 cm by 8 cm. The area of the shaded portion of the rectangle is _____ . [2]



12. 250 children went on a picnic. Each child drank a can of drink containing 250 mL. How many litres [2]
have been drank?

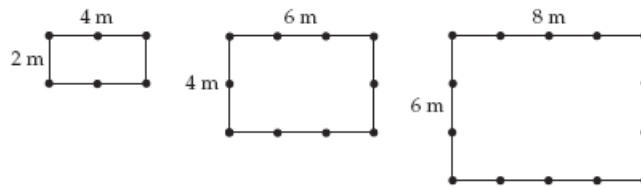
13. The volume of a cube is 343 cm^3 . Find the sum of its edges. [2]

14. Find the volume of a cylinder with a radius of 14 cm and height 20 cm ($\pi = \frac{22}{7}$). [2]

15. A triangle has an area of 90 cm^2 . If the base of the triangle is 20 cm, find its height. [2]

16. Find the total area of the four walls of a room that are 8 m long, 6 m side and 2.4 m high. [2]

17. The diagrams shows strips of land whose length and breadth each increase by 2 metres from the previous strip. The dots represent posts placed 2 metres apart. Find the number of posts needed for a strip land whose longer side measures 14 metres. [2]



18. Insert grouping symbols to make the following statement true. [2]

$$8 - 3 - 2 \times 5 = 15$$

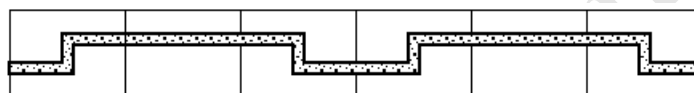
19. The three consecutive numbers 25, 26 and 27 have a product of 17,550. Find three consecutive numbers with a product of 990. [2]

20. Turf is sold in strips 50 cm by 3 m. How many strips will Steven need to cover a rectangular field 12 m by 8 m? [2]

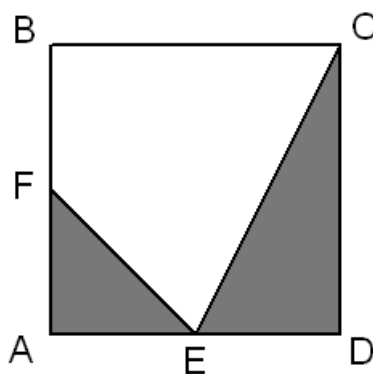
7.6.3 Part C — 10 Extension Questions (3 marks each)

21. A 4 cm by 4 cm by 4 cm cubic block has all six faces painted in red. The cube is then cut into 1 cm [3]
by 1 cm by 1 cm cubes. How many of these 1-cm cubes will have red paint on just two faces?

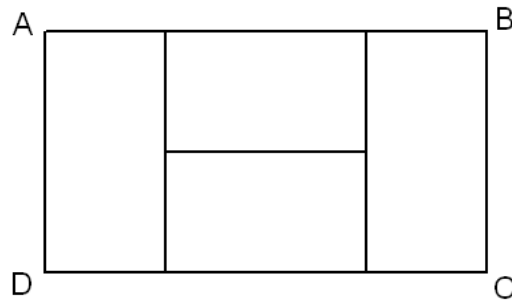
22. The first six tiles of a border pattern are shown below. John continues the pattern and notes the [3]
design on the 16th, 25th, 35th, and 46th tiles. Which of the noted tiles is different from the other
three?



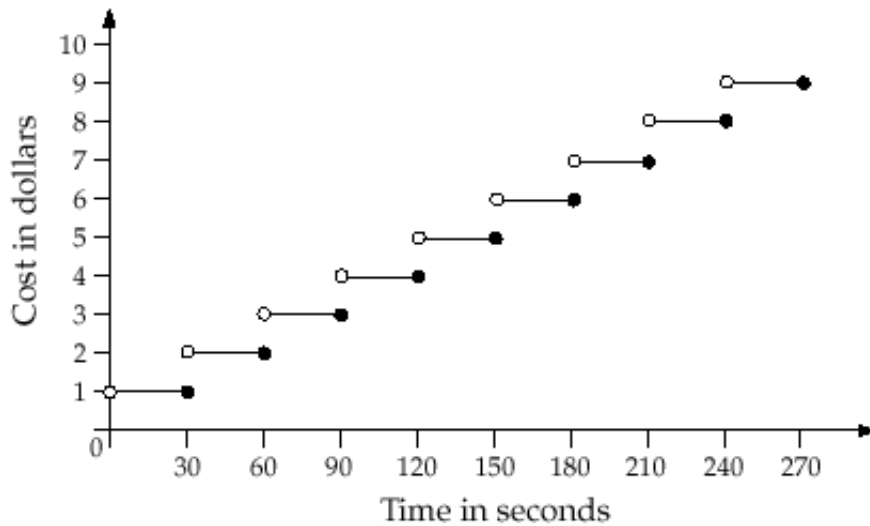
23. ABCD is a square, and E and F are midpoint of sides AD and AB respectively as shown. What [3]
fractional part of the total area of the square is the shaded area?



24. Rectangle ABCD contains 4 small congruent rectangles as shown. If the perimeter of one of the small rectangles is 24 cm, what is the area of rectangle ABCD? [3]



25. The step graph shows the cost of telephone calls lasting different lengths of time. [3]



Linda makes two telephone calls, one lasting 2 minutes 32 seconds and the other lasting 3 minutes 5 seconds. What is the total cost of these calls?

26. The chairs in a school hall are arranged in 20 rows with 24 chairs in each row. Jeffrey removes the first five rows to leave space at the front. He places these chairs in the remaining rows, so that each row has the same number of chairs. How many chairs are now in each row? [3]

27. In a garden, the ratio of flowering plants to non-flowering plants is 3:5. There are 640 plants in the garden. How many non-flowering plants are in the garden? [3]

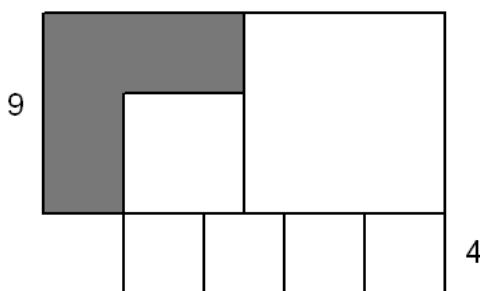
28. The price of a coat was \$150. The price increased by 25%. A month later Jessica bought the coat at a 25% discount sale. How much did Jessica pay for the coat? [3]

29. Dolly tossed a fair coin ten times, with 3 heads and 7 tails appearing. What is the probability that the next toss will be a head? [3]

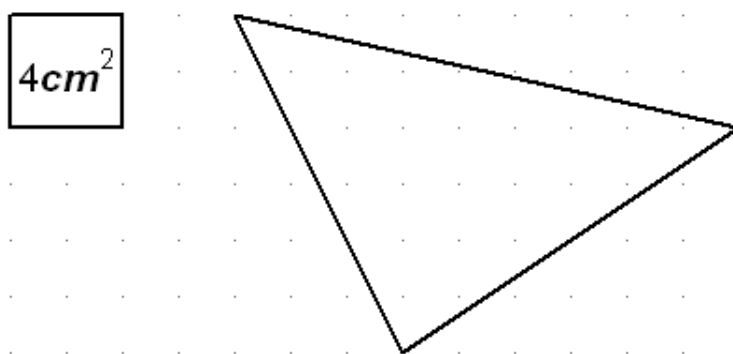
30. Bob has 43 bookmarks, Tom has 27 and Alice has 14. Bob wants them to share the bookmarks equally. How many bookmarks must Bob give away so that three children have the same number of bookmarks? [3]

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

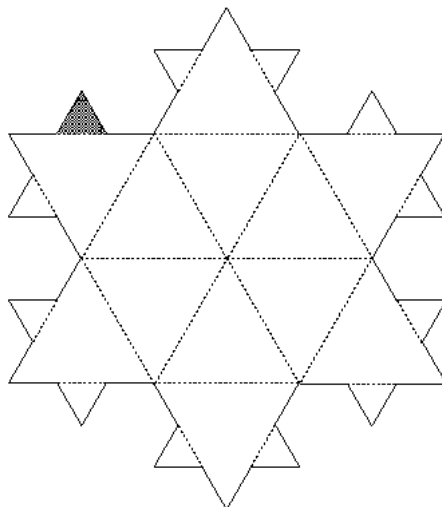
31. Shown below there are two large congruent squares with sides 9 units long and four small congruent squares with sides 4 units long. If a middle-sized square is placed in one of the larger squares, what is the area of the shaded part? [5]



32. The square on the left has a area of 4 cm^2 . Find the area of the triangle on the right. [5]



36. Each triangle in the snowflake is equilateral. The 48 sides of the perimeter are each 1 centimetre in length. What fraction of the snowflake is represented by the shaded triangle? [5]



37. Consider the pattern: [5]

$$10^2 - 10 + 1 = 91$$

$$10^4 - 10^2 + 1 = 9901$$

$$10^6 - 10^3 + 1 = 999001$$

Use this pattern to find a and b, if $10^{10} - 10^a + 1 = b$

38. In a set of consecutive odd numbers 1, 3, 5, 7, . . . , N has a sum of 400. How many numbers are in the set? [5]
