

## Year 8 Term 3 Homework

<b>Student Name:</b> _____	<b>Grade:</b> _____
<b>Date:</b> _____	<b>Score:</b> _____

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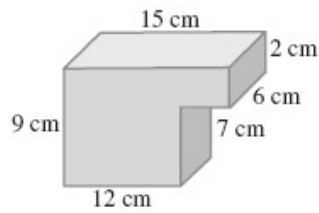
# 4 Year 8 Term 3 Week 4 Homework

## 4.1 Area and Volume

### 4.1.1 Surface area and volume

**Exercise 4.1.1** For each of these figures below,(all units are in cm) find the cross-sectional area, the surface area and the volume.

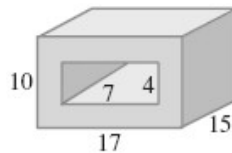
1. *cross-sectional area* = \_\_\_\_\_, *surface area* = \_\_\_\_\_, *volume* = \_\_\_\_\_



\_\_\_\_\_

\_\_\_\_\_

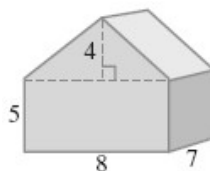
2. *cross-sectional area* = \_\_\_\_\_, *surface area* = \_\_\_\_\_, *volume* = \_\_\_\_\_



\_\_\_\_\_

\_\_\_\_\_

3. *cross-sectional area* = \_\_\_\_\_, *surface area* = \_\_\_\_\_, *volume* = \_\_\_\_\_



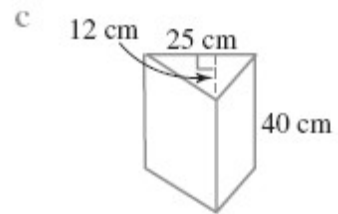
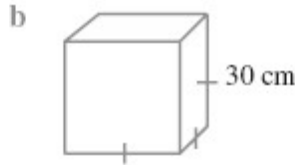
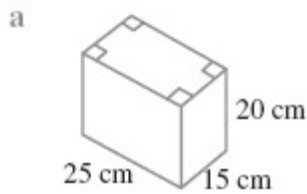
\_\_\_\_\_

\_\_\_\_\_

**4.1.2 Volume and capacity**

**Exercise 4.1.2**

1. Find the capacity, in litres, of each of the following prisms:



a. Capacity = \_\_\_\_\_ , b. Capacity = \_\_\_\_\_ , c. Capacity = \_\_\_\_\_

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2. A fish tank has a capacity of 68 L. Find the height of the tank if the length is 65 cm and the width is 25 cm.

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3. If the surface area of a cube is  $2400 \text{ cm}^2$ , find the capacity, in litres, of the cube.

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4. A rectangular tank 90 cm long and 70 cm wide contains some water and 5 blocks of brick each with a volume of  $800 \text{ cm}^3$ . The height of the water level is 40 cm. If water is drained out at the rate of 5 litres per minute, how long would it take to empty the water?

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**4.1.3 Mass (kg)****Exercise 4.1.3 Convert the following units:**

1. 2.35 kg to g \_\_\_\_\_

2. 72 kg to t \_\_\_\_\_

3. 3456 mg to g \_\_\_\_\_

4. 3.8 t to kg \_\_\_\_\_

5. 0.15 t to kg \_\_\_\_\_

**Exercise 4.1.4**

1. What is 8% of 5 kg 100 g? \_\_\_\_\_

2. A carton containing 20 small boxes each has a mass of 1.04 kg. If each box has a mass of 82 g, find the mass of the carton without the boxes.

\_\_\_\_\_

3. If 9 identical boxes have a total mass of 7.2 kg, find the mass of 5 boxes, in grams.

\_\_\_\_\_

4. Alice's weight is  $\frac{4}{5}$  of John's weight. Their total weight is 72 kg. Find John's weight.

\_\_\_\_\_

5. The same packet of chips contains 63.6 g of carbohydrates and 560 mg of sodium. How much more carbohydrates is there than sodium?

\_\_\_\_\_

6. A rectangular container measures 60 cm by 45 cm by 36 cm and has a mass of 14.5 kg when empty. Find the mass of the container when it is filled with water to two-third of its height.

\_\_\_\_\_

7. A 200-g packet of potato chips contains 25 g of fat. What fraction of the contents is fat?

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## 4.2 Equations

### 4.2.1 Two-step equations

**Exercise 4.2.1** Solve the following equations:

1.  $7x + 6 - 4x = 15$

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2.  $5x + 2 - 9x = -26$

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3.  $3x + 7x + 6x = 64$

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4.  $2y - 7 + 6y = 17$

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5.  $3(5y - 2) + 6(7 + y) = 120$

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6.  $6y + 3(4y - 7) = 123$

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7.  $(4 + 5z) + (7z - 3) - (8 + 9z) = -1$

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8.  $6(9z + 5) - 8(4z - 2) = 90$

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**4.2.2 Equations with pronumerals on both sides****Exercise 4.2.2**

1.  $5x - 9 = 2x - 6$

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2.  $8x + 40 = 5x + 4$

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3.  $3x - 25 = 13x + 15$

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4.  $11x + 10 + 5 = 3x + 6x + 7$

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5.  $3y + 4 + 5y = 2y + 46$

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6.  $4y + 13 + 2y - 4 = 3y$

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7.  $3(2y + 5) = 8y + 3$

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8.  $3(y - 2) = 5(4y + 9)$

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**4.2.3 Equations with fractions****Exercise 4.2.3**

1.  $\frac{3}{8} + \frac{x}{3} = 3.$

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2.  $\frac{2x}{3} - \frac{3x}{4} = \frac{1}{2}$

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

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4.  $\frac{2x}{3} + \frac{3x}{5} = \frac{x}{4} + 2$

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5.  $\frac{3}{2x} - \frac{2}{5x} = 6.$

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6.  $\frac{2-x}{3} - \frac{x-4}{5} = \frac{3+x}{2}.$

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**4.2.4 Number problems**

**Exercise 4.2.4**

1. Two times the difference of 13 minus a number is 6. What is the number?

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2. Three times a number equals 12 less than seven times the number. What is the number?

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3. Seven more than five times a number is equal to the number increased by 23. What is the number?

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4. Eight times the sum of a number and two times the number is 48. Find the number.

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5. Ten times the difference of 11 minus a number is 20. What is the number?

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6. Seven more than nine times a number is equal to the number increased by 47. What is the number?

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7. A number is doubled then increased by 11, the result is 43. Find the number.

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8. The product of a certain number and 6 is decreased by 4. The result is 14. Find the number.

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**4.2.5 Problem solving****Exercise 4.2.5**

1. A rectangular tank was filled with  $4500 \text{ cm}^3$  of water to a level of 8 cm. Fifteen similar marbles were put into the tank and the water level rose by 2 cm. Find the volume of each marble.

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2. David drew a big square of side 18 cm on a piece of cardboard. Then he drew 4 smaller squares of side 5 cm at each corner of the big square.

(a) Find the perimeter of the "cross" figure seen on the big square.

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(b) Find the area of the cross figure.

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3. The length of a cuboid is 22.5 cm. Its breadth is 2.5 cm shorter than the length and its height is 0.4 times the sum of the length and the breadth.

(a) What is the height of the cuboid?

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(b) Find the capacity of the cuboid, in litres.

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4. The postal charge for sending a parcel to China for first 10 kg is \$15. \$6 will be charged for additional 2 kg or less. What is the postal charge for a parcel weighing 25.5 kg?

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### 4.3 Miscellaneous Exercises

#### Exercise 4.3.1

1. Evaluate the following:

(a)  $(0.3)^3 \times 0.9$  \_\_\_\_\_

(b)  $8\frac{1}{2}\%$  of \$200.00 \_\_\_\_\_

(c)  $(\sqrt{676} + 14^2 - \sqrt[3]{512}) \times 3^4$  \_\_\_\_\_

2. A water tank was  $\frac{1}{4}$  full. After 30 Litres of water were added, it was  $\frac{1}{3}$  full. What is the capacity of the tank?

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3. How long would it take to swim four lengths of a 50 metre pool if the swimmer could cover  $1\frac{1}{4}$  m in a second?

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4. A rectangle tank measuring 30 cm by 20 cm contains water to a depth of 18 cm. The water is then poured into cylindrical glasses each of diameter 5 cm and height 7 cm. How many full cylindrical glasses can be filled?

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5. A solid cylinder has a volume of  $5026 \text{ cm}^3$ . If its radius is 8 cm, find its total surface area.

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### 4.4 Maths Challenge

#### Exercise 4.4.1

1. Both 4 and 8 can be written as the sum of two prime numbers (for example:  $4 = 2 + 2$ ,  $8 = 3 + 5$ ). How many numbers less than 20 **cannot** be written as the sum of two prime numbers?

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2. The symbol  $50!$  represents the product of all the whole numbers from 1 to 50 inclusive. If I were to calculate the actual value, how many zeros would the answer have at the end?

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3. In a village a pub is 300 m due north of a local school, and a church is 300 m from the pub on a bearing of  $60^\circ$ . What is the the bearing of the school from the church?

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4. On her birthday in 2007, Rachel's age is equal to twice the sum of the digits of the year in which she was born. How many possible years are there in which she could have been born?

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