

Year 9 Term 1 Homework

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

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5 Year 9 Term 1 Week 5 Homework

5.1 Consumer arithmetic

5.1.1 Profit and loss

- Profit = selling price - cost price.
- Loss = cost price - selling price.
- to express the profit or loss as a percentage of the cost price or selling price:
 - calculate the profit or loss
 - divide the profit or loss by the cost or selling price
 - multiply by $\frac{100}{1}\%$

Exercise 5.1.1

1. A retailer purchased an electric rice cooker for \$30 and sold it for \$42. Calculate the percentage profit.

2. Krystal bought a tennis racket for \$80 and sold it 12 months later at a garage sale for \$56. Express the loss as a percentage of the cost price.

3. A shop owner sold a computer for \$2875, making a profit of 32% on the wholesale price. What was the wholesale price of the computer? Give your answer correct to nearest dollar.

4. A manufacturer sells plates to a wholesaler at cost plus 20%. The wholesaler then marks up the price by a further 25% and sells them to a retailer. The retailer then sells the plates for \$4.20 each, making a profit of 40%. How much would it cost to manufacture 500 plates?

5.2 Equations, inequations and formulae

5.2.1 One and two step equations

Exercise 5.2.1 Solve each of these equations, giving your answers as fractions or mixed numerals, in simplest form.

1. $-5 - 23y = 9$ _____

2. $12k - 8 = -17$ _____

3. $13 - 24x = -59$ _____

4. $25 - 6m = 12$ _____

5. $7p + 27 = -18$ _____

Exercise 5.2.2 Solve these quadratic equations, giving the solution as either integers or fractions in simplest form.

1. $9x^2 = 9$ _____

2. $5x^2 = 80$ _____

3. $16x^2 = 100$ _____

4. $81y^2 = 144$ _____

5. $9p^2 = 16$ _____

Exercise 5.2.3 Problem solving

1. The cost (C), in dollars, of an apartment on level L of a building in North Sydney is given by $C = 400,000 + 5000(L - 12)$. Find the cost of an apartment on level 28.

2. If $T = \frac{D}{S}$, find S when D is 156 km and $T = 2$ hours and 24 min.

5.2.2 Equations with pronumerals on both sides**Exercise 5.2.4 Number problems**

1. $5x - 12 = 12 + 2x$ _____
2. $35 - 3y = 7 + 4y$ _____
3. $10 + 4x = 3x - 1$ _____
4. $1.2x + 2.6 = 2.8x - 4.2$ _____
5. $8 - 4x = 12 + 6x$ _____

Exercise 5.2.5 Problem solving

1. *Six times a number equals 8 less than eight times the number. What is the number?*

2. *Five times a number equals 36 less than nine times the number. What is the number?*

3. *Three times the sum of a number and seven times the number is 168. Find the number.*

4. *A girl is 12 years older than her sister. If in 4 years time she will be twice her age, what are their ages now?*

5. *Eight times a certain number plus ten is equal to twelve times the same number minus six. Find the number.*

6. *Five times a certain number minus five is equal to seven plus two times the same number. Find the number.*

5.2.3 Equations with grouping symbols**Exercise 5.2.6 Solve the following equations:**

1. $(6x + 7) + (5x + 2) = 97$

2. $3x + 6(7x - 5) = 15$

3. $5(3y - 2) + 4(9 + y) = 178$

4. $4(x+3) = 3(x-2)$

5. $7(4x + 3) - 3(8x - 5) = 0$

Exercise 5.2.7 Number problems:1. *Six times the sum of a number and ten times the number is 132. Find the number.*

2. *Ten times the sum of a number and three times the number is 280. Find the number.*

3. *Five times the difference of 15 minus a number is 40. What is the number?*

5.3 Miscellaneous Exercises

Exercise 5.3.1 Solve the following equations:

1. $2(5 + 6x) - 7(9x) = -143$

2. $(4 + 7x) + (5x - 9) - (3 + 8x) = 0$

3. $5(7x - 3) + 4(2 + x) = 344$

4. $6(x - 8) = 4(5 + 2x)$

5. $3(2x - 4) = 2(9 - 6x) - 12$

Exercise 5.3.2

1. Given that $C = \frac{P}{A} + \frac{P}{B}$. Find B when $P = 15$, $C = 8$ and $A = 3$.

2. If $E = \frac{AB}{A+B}$, find B when $E = 15$ and $A = 3$.

Exercise 5.3.3 Write an equation for each of the following and then solve them.

1. *Nine is subtracted from a number and the result is multiplied by five to equal thirty. What is the number?*

2. *Two brothers are presently 2 years old and 14 years old respectively. How many years will have to pass before the elder brother is $2\frac{1}{2}$ times the age of younger brother?*

3. *The quotient of a number and nine increased by 2 is 4. What is the number?*

4. *Three times a number equals 12 less than five times the number. What is the number?*

5. *One number is ten more than another number. The sum of the larger number and twice the smaller number is 25. Find the numbers.*

6. *One of two numbers is one-half of the other number. The sum of the numbers is 12. Find the numbers.*

5.4 Maths challenge

Exercise 5.4.1

1. Suppose P and Q both represent prime numbers such that $5 \times P + 7 \times Q = 109$. Find the value of P and Q .

2. There are 25 students on class SPAM. 11 play chess, 15 play tennis, while 3 play neither chess nor tennis. How many students play chess, but not tennis?

3. Express the extended fraction shown below as a simple fraction in lowest terms.

$$\frac{3}{4 + \frac{3}{4 + \frac{3}{4}}}$$

4. 4 chefs require 10 minutes to prepare 20 desserts. At this rate, how many chefs are needed to prepare 75 desserts in 15 minutes?
