Year 9 Term 1 Homework

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

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6 Year 9 Term 1 Week 6 Homework

6.1 Equations, inequations and formulae

6.1.1 Equations with pronumerals on both sides

Exercise 6.1.1

1. $14x - 15 = 8x + 9$
2. $4y + 16 = 52 - 5y$
3. $5z - 4 = 18 + z$
4. $-6 - 4p = 3 - 25p$
5. $23 - 7q = 5q - 19$

Exercise 6.1.2

1. *The sum of three consecutive numbers is 27. What are the numbers?*
2. *Two more than eight times a number is equal to the number increased by 86. What is the number?*
3. *The sum of two numbers is 25. The difference of the same two numbers is seven. Find the numbers.*
4. *One of two numbers is two-fifths of the other number. The sum of the numbers is 7. Find the numbers.*
5. *The difference of two numbers is 39. The larger number is 4 more than eight times the smaller number. What are the numbers?*

6.1.2 Equations with grouping symbols

Exercise 6.1.3 Solve the following equations:

1. $3(x+5) = 2(x+7)$

2. $9(2y-3) = 3(y+6)$

3. $10(a+6) = 6(a+2)$

4. $3(b+2) + 2(b+1) = 63$

5. $2(8c-1) + 5(2c-3) = 35$

6. $8(3p-2) - 2(5-4p) + 58 = 0$

7. $9 - 2(x-8) = 2(x-4) + 1$

8. $25y - 3(3y+5) = 4(y-7) + 45$

6.1.3 Equations with one fraction

Example 6.1.1

$$\frac{11-4x}{3} = 3$$
$$3 \times \frac{11-4x}{3} = 3 \times 3 \qquad \textit{Multiply both sides by the denominator}$$
$$11 - 4x = 9$$
$$-4x = 9 - 11$$
$$-4x = -2$$
$$x = \frac{1}{2}$$

Exercise 6.1.4 Solve each of the following equations.

1. $\frac{3x}{2} + 4 = 13$

2. $\frac{5y}{6} - 3 = 12$

3. $-10 - \frac{a}{7} = -4$

4. $\frac{11-3b}{7} = 5$

5. $\frac{3b-1}{5} = 7$

6. $\frac{65+10c}{9} = 5$

Exercise 6.1.5 Further application

1. $\frac{m+3}{2} + 4 = 9$

2. $\frac{9+8y}{7} + 6 = 13$

3. $\frac{a-12}{7} + 5 = 4$

4. $\frac{4x}{8} = 3x - 4$

5. $3b + 11 = \frac{2}{3}b$

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

7. $\frac{x+9}{4} = x$

8. $\frac{1}{2}(3x - 6) = 6$

6.1.4 Equations with more than one fraction

Example 6.1.2

$$\frac{x}{3} - \frac{x}{5} = 12$$
$$15 \times (\frac{x}{3} - \frac{x}{5}) = 12 \times 15 \quad \textit{Multiply both sides by the LCM}$$
$$(15 \times \frac{x}{3}) - (15 \times \frac{x}{5}) = 180$$
$$5x - 3x = 180$$
$$x = 90$$

Exercise 6.1.6

1. $\frac{a}{3} + \frac{a}{2} = 5$

2. $\frac{b}{4} + \frac{b}{6} = 3$

3. $\frac{c}{6} - \frac{c}{8} = 12$

4. $\frac{6d}{7} + \frac{2d}{3} = 8$

5. $\frac{3e}{4} - \frac{5e}{8} = 4$

6. $\frac{3+f}{21} = \frac{4}{7}$

Exercise 6.1.7 Problem solving

1. *When the sum of A and B is 87, the sum of B and C is 69 and the sum of C and A is 72. Find the value of A, B and C.*

2. *Three people P, Q and R have $180 in total. If R has $30 more than Q and P has $12 less than Q, how much does each one have?*

3. *The breadths of two rectangles, X and Y, have measurements of 14 cm and 8 cm. The sum of the lengths of X and Y is 22 cm and the sum of their area is 236 cm^2. What is the area of X?*

4. *The father is 36 years old, while his son's age is a quarter of the father's age. In how many years will the father's age be twice and 7 years more than the son's age?*

6.2 Maths challenge

Exercise 6.2.1

1. *If* $110 + x = y + 97$*, then*

   A. $x + 13 = y$ *B.* $x = y + 13$ *C.* $x + y = 13$ *D.* $x + y = 207$ *E.* $x - y = 207$

2. *The larger of two numbers is 8 more than twice the smaller number. If their sum is 380. What is the smaller number?*

3. *Of the following, which is the largest fraction?*

   A. $\frac{3}{7}$ *B.* $\frac{7}{15}$ *C.* $\frac{4}{9}$ *D.* $\frac{6}{13}$ *E.* $\frac{8}{17}$

4. *A car is advertised as marked down from \$6000 to \$3600. What percentage discount of the original price does this represent?*

   A. 36% *B. 40%* *C. 42%* *D. 48%* *E. 54%*

5. *The numbers 24, 27, 36, 42, 63, 84, 87 and 96 are separated into two group of four numbers so that the difference between the sums of the numbers in each group is the least possible. This difference is:*

   A. 0 *B. 1* *C. 3* *D. 5* *E. 7*

6. *Red rose plants are on sale for \$3 each and yellow ones for \$5 each. A gardener wants to buy a mixture of both types (at least one of each) and decides to buy 13 in total, buying more yellow ones than red ones. How much could the gardener spend?*

   A. \$52 *B. \$67* *C. \$65* *D. \$58* *E. \$57*