

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

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6 Year 8 Term 3 Week 6 Homework

6.1 Equations

6.1.1 Equations with pronumerals on both sides

Exercise 6.1.1 Solve the following equations:

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

2. $10x + 50 = 4x + 8$

3. $4x + 5 = 9x + 30$

4. $9 - 10x = 2x - 6$

5. $11y + 1 - 5 = 3y + 6y + 7$

6. $12y - 13 - 7 = 3y - 6 + 2y$

7. $3y + 4 + 5y + 6 = 2y + 46$

8. $7y + 18 = -12 - y - 30 - 4y$

6.1.2 Equations with grouping symbols**Exercise 6.1.2 Solve each of these equations:**

1. $3(2x + 12) = 2x + 4$

2. $7x - 5 = 2(3x + 20)$

3. $6(2x + 1) = 3(5x - 2)$

4. $7(x + 9) = 3(5 + x)$

5. $3(4 - y) = 6(5 - y)$

6. $3(2y) + 2(y + 4) = 24$

7. $4(y + 6) + 3y = 8(y + 2)$

8. $9(2 - y) - (5y + 1) = 5(3 - y) - 10y$

6.1.3 Equations arising from substitution**Exercise 6.1.3**

1. If $V^2 = U^2 + 4AS$, find the value of S when $V = 5$, $U = 9$ and $A = -2$.

2. If $m = \frac{a-b}{c-d}$, find the value of a when $m = 4$, $b = 4$, $c = 5$ and $d = 7$.

3. If $T = a^{n-r}$ find the value of n when $T = 64$, $a = 4$ and $r = 2$.

4. If $\frac{1}{f} = \frac{1}{u} + \frac{1}{v}$, find the value of v when $f = 4$ and $u = 8$.

5. Given the formula $A = \frac{1}{2}(a + b)h$, find:

(a) A if $a = 5$, $b = 3$ and $h = 8$.

(b) h if $A = 37.5$, $a = 7$ and $b = 8$.

(c) a if $A = 87.5$, $b = 10$ and $h = 7$.

6.1.4 Equations with fractions**Exercise 6.1.4 Solve each of these equations:**

1. $\frac{12-2x}{5} = 6$

2. $\frac{22-19x}{8} = -2$

3. $\frac{9x}{4} + 12 = 48$

4. $\frac{2y-5}{5} = \frac{50-y}{7}$

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

6. $\frac{5-2y}{3} = \frac{9-3y}{5}$

6.1.5 Number problems**Exercise 6.1.5**

1. *If 5 more than a certain number is divided by 4, the result is 5. What is the number?*

2. *8 is subtracted from a certain number and this is then multiplied by 6, the result is 24. What is the number?*

3. *When a certain number is divided by 4 then increased by 7, the result is 9. What is the number?*

4. *When 12 is subtracted from 4 times a certain number, the result is equal to 6 more than the number, what is the number?*

5. *When the difference between a certain number and 6 is divided by 4, the result is 5. Find the number.*

6. *When 7 is subtracted from a certain number and this is then divided by 3, the result is 5. What is the number?*

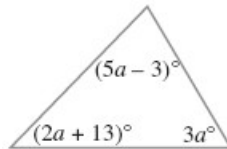
7. *When a certain number is doubled and then decreased by 7, the result is equal to 3 more than the number. What is the number?*

6.1.6 Geometry problems

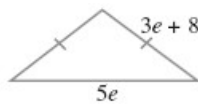
Equations can be used to solve problems that involve measurement concepts and geometry properties.

Exercise 6.1.6 Form an equation using a geometric property, then solve it to find the value of the pronumeral:

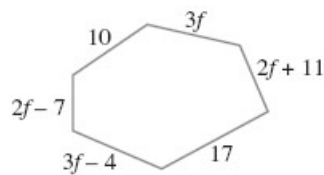
1. Form an equation for the given figure and find the value of a .



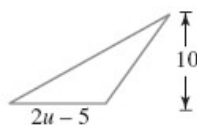
2. If the perimeter is equal to 148 cm, find the value of e .



3. If the perimeter of the polygon is equal to 197 cm, find the value of f .



4. If the given triangle has an area of 110 cm^2 , find the value of u .



6.1.7 Problem solving

Exercise 6.1.7

1. *The perimeter of a rectangle is 58 cm and the width is 5 cm shorter than the length. Find the area of the rectangle.*

2. *The total cost of movie tickets for three adults and four children is \$67. If an adult's ticket costs \$6 more than a child's ticket, find the cost of each.*

3. *John is 46 years old and his son Bob which is 15 years old. In how many years' time will John be twice as old as his son?*

4. *The length of a rectangle is twice the width, and the area is 72 cm^2 . What is the perimeter of the rectangle?*

5. *The equal sides of an isosceles triangle are 6 cm shorter than the base. If the perimeter is 72 cm. Find the area of the triangle.*

6. *A woman is five times as old as her grandson. If she is sixty years older than the boy, what are their ages?*

6.2 Maths Challenge

Exercise 6.2.1

1. P and V are connected by relation $PV^2 = 4$. If V is doubled, by what is P multiplied?

- (A) 2 (B) 4 (C) 16 (D) $\frac{1}{16}$ (E) $\frac{1}{4}$

2. A fraction $\frac{x}{y}$ is such that when I add 8 to x and 12 to y the value of the fraction is unchanged. What could the pair x, y be?

- (A) 1, 3 (B) 5, 10 (C) 9, 12 (D) 10, 15 (E) 12, 16

3. One bottle holds 250 mL more than another. If the smaller is three quarters full it holds as much as the larger one when it is half full. What is the capacity of each bottle?

4. Bill, Tony and Mike are given \$200 as reward for returning a lost wallet. They agree that Mike should get four times as much as Bill who gets three times as much as Tony. How much does each boy receive?

5. A father is six times as old as his son. Two years ago he was eight times as old. Find his son's age.

6. The library book I am reading has 360 pages. The day I borrowed it I read exactly half. The next day I read one-third of what was left. On the day after that I read one-quarter of what remained. How many pages of the book remained unread?
