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Name : Answers

Date : / 9 / 2025

Subject: Worksheet (2) /unit (2)

Grade : 7 ( )

Equations and formulae

❖ 2.1 Solving One-Step Equations

Q1: Solve each equation. Show your working.

a) $x + 7 = 12$

$-7 \quad -7$

$x = 5$

b) $y - 9 = 4$

$+9 \quad +9$

$= 13$

c) $\frac{5z}{5} = \frac{25}{5}$

$z = 5$

d) $x\frac{m}{6} = 3x6$

$m = 18$

e) $a + 13 = 20$

$-13 \quad -13$

$a = 7$

f) $\frac{-x}{-1} = \frac{-9}{-1}$

$x = 9$

❖ 2.2 Solving Two-Step Equations

Q2: Solve each equation step by step.

a) $2x + 3 = 11$

$-3 \quad -3$

$\frac{2x}{2} = \frac{8}{2}$

$x = 4$

b) $\frac{4(x-2)}{4} = \frac{12}{4}$

$x - 2 = 3$

$+2 \quad +2$

$x = 5$

c) $\frac{n}{5} + 2 = 6$
$-2 \quad -2$

$5 \times \frac{n}{5} = 4 \times 5$

$n = 20$

d) $7p - 5 = 23$
$+5 \quad +5$

$\frac{7p}{7} = \frac{28}{7}$

$P = 4$

e) $3q + 4 = 19$
$-4 \quad -4$

$\frac{3q}{3} = \frac{15}{3}$

$q = 5$

❖ 2.3 More Complex Equations

Q3: Solve the following.

a) $y - 4 = 3y + 2$
$-y \quad -y$

$-4 = 2y + 2$
$-2 \quad -2$

$\frac{-6}{2} = \frac{2y}{2}$

$\boxed{y = -3}$

b) $2y + 3 = 5y - 6$
$-2y \quad -2y$

$3 = 3y - 6$
$+6 \quad +6$

$\frac{9}{3} = \frac{3y}{3}$

$\boxed{3 = y}$

c) $3(m + 4) = 2m + 18$

$3m + 12 = 2m + 18$

$-2m \quad -2m$

$m + 12 = 18$

$-12 \quad -12$

$\boxed{m = 6}$

d) $6a - 2 = 3a + 7$

$-3a \quad -3a$

$3a - 2 = 7$

$+2 \quad +2$

$\frac{3a}{3} = \frac{9}{3}$

$\boxed{a = 3}$

e) $\frac{(2x + 5)}{8} \times 8 = 7 \times 8$

$2x + 5 = 21$

$-5 \quad -5$

$\frac{2x}{2} = \frac{16}{2}$

$\boxed{x = 8}$

❖ 2.4 Working with Formulae

Q4: Substitute the values given into each formula.

Solve the equation to find the value of the unknown.

a) $t = k - 6$ Find k when $t = 16$

$16 = k - 6$

$+6 \quad +6$

$\boxed{22 = k}$

b) $s = 8 + n$ Find n when $s = 22$

$22 = 8 + n$

$-8 \quad -8$

$\boxed{14 = n}$

c) $y = kx$ Find k when $y = 64$ and $x = 8$

$\frac{64}{8} = \frac{k \times 8}{8}$

$\boxed{8 = K}$

d) $T = \frac{P}{4}$ Find P when $T = 32$

$4 \times 32 = \frac{P}{4} \times 4$

$\boxed{128 = P}$

Q5:

a) The area of a rectangle is given by $A = lw$.
If the area is 60 cm^2 and the length is 12 cm, find the width.

$A = LW$

$\frac{60}{12} = \frac{12w}{12}$

$5 = w$

$\boxed{w = 5 \text{ cm}}$

b) The formula for speed is $S = \frac{d}{t}$.
A car travels 180 km in 3 hours. What is its average speed?

$S = \frac{d}{t}$

$= \frac{180}{3}$

$\boxed{S = 60}$

c) The perimeter of a rectangle is given by $P = 2l + 2w$.
If the perimeter is 50 m and the length is 15 m, find the width.

$P = 2L + 2w$

$50 = 2 \times 15 + 2w$

$50 = 30 + 2w$

$-30 \quad -30$

$\frac{20}{2} = \frac{2w}{2}$

$\boxed{10 = w}$

Q6: Write a formula for converting.

a) m to km

$Km = \frac{m}{1000}$

b) weeks to years

$years = \frac{weeks}{52}$

c) minutes to hours

$h = \frac{min}{60}$

d) days to hours

$h = day \times 24$

e) days to weeks

$w = \frac{D}{7}$

Challenge Question:

Solve: $5(x - 2) + 3 = 2x + 10$.

$5x - 10 + 3 = 2x + 10$

$5x - 7 = 2x + 10$

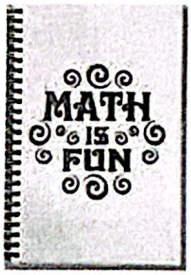
$-2x \qquad -2x$

$3x - 7 = 10$

$+7 \quad +7$

$\frac{3x}{3} = \frac{17}{3}$

$\boxed{x = \frac{17}{3}}$



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