

HONORS CHAPTER 3 HW #3 (REVIEW + WP's)

(answer key)

$$\boxed{1} \quad \frac{x+6}{7} = \frac{x-4}{3}$$

$$3(x+6) = 7(x-4)$$

$$3x+18 = 7x-28$$

$$\frac{46}{4} = \frac{4x}{4}$$

$$\boxed{x = 11.5}$$

$$C: 3(11.5+6) = 7(11.5-4)$$

$$52.5 = 52.5 \checkmark$$

$$\boxed{2} \quad \frac{3(w+4)}{4w} = -\frac{5}{4}$$

$$(-5)(4w) = (4)(3)(w+4)$$

$$-20w = 12w + 48$$

$$-32w = 48$$

$$\frac{-32}{-32} \quad \frac{48}{-32}$$

$$\boxed{w = -\frac{3}{2} \text{ or } -1.5}$$

$$C: \frac{3(-1.5+4)}{4(-1.5)} = \frac{-5}{4}$$

$$\frac{7.5}{-6} = -1.25$$

$$-1.25 = -1.25 \checkmark$$

$$\boxed{3} \quad 5(2-x) + 2x = -3x + 5$$

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

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

$$\frac{+3x}{+3x} \quad \frac{+3x}{+3x}$$

$$\rightarrow 10 \neq 5$$

$$\boxed{x = \text{NO SOLUTION}}$$

Tip Check $x=0$, THIS IS A COMMON MISTAKE WHEN $x = \emptyset$

$$C: \boxed{x=0} \quad 5(2-0) + 2(0) = -3(0) + 5$$

$$10 \neq 5 \quad \emptyset$$

Variable dropped out

$$\boxed{4} \quad -\frac{2}{3}(18x-12) = 5 - 3(4x-1)$$

$$-12x + 8 = 5 - 12x + 3$$

$$-12x + 8 = -12x + 8$$

$$\frac{+12x}{+12x} \quad \frac{+12x}{+12x}$$

$$\rightarrow 8 = 8 \checkmark$$

$$\boxed{x = \text{ALL REAL NUMBERS}}$$

Tip: Mentally Check

$$C: x=0 \rightarrow 8 = 8 \checkmark$$

$$C: x=1 \rightarrow -4 = -4 \checkmark$$

TIP: For PROPORTIONS USE MEANINGFUL VARIABLES: P = percent
N = number

5 $\frac{IS}{OF} = \frac{\%}{100} \Rightarrow \frac{18}{160} = \frac{P}{100}$ C: $\frac{18}{160} = \frac{11.25}{100}$
 $.1125 = .1125$
 $P = (18)(100) \div 160$
 $P = 11.25\%$

6 $\frac{185}{100} = \frac{N}{50}$ C: $\frac{185}{100} = \frac{92.5}{50}$
 $1.85 = 1.85 \checkmark$
 $N = (185)(50) \div 100$
 $N = 92.5$

7 IS $\rightarrow =$ EQ: $.032 * N = \$15$ Tip: Check w/ Proportion
OF $\rightarrow x$ $\frac{.032}{.032} \quad \frac{.032}{.032}$
 $N = \$468.75$

C: $\frac{15}{N} = \frac{3.2}{100}$
 $N = (15)(100) \div 3.2$
 $N = \$468.75 \checkmark$

8 $\frac{42}{400} = \frac{P \cdot 400}{400}$
 $P = .105 \rightarrow$ Change to a %
 10.5%

C: $\frac{42}{400} = \frac{P}{100}$
 $P = (42)(100) \div 400 = 10.5\% \checkmark$

9 $D = .24 \cdot 710 \text{ miles}$
 $D = 170.4 \text{ miles}$

C: $\frac{D}{710} = \frac{24}{100}$
 $D = (710)(24) \div 100$
 $D = 170.4 \text{ miles} \checkmark$

10

$$V = \frac{\pi r^2 h}{3}$$

$$\frac{3V}{\cancel{r^2 \pi} \cancel{\pi r^2}} = \frac{\pi r^2 h}{\cancel{\pi r^2}}$$

$$h = \frac{3V}{\pi r^2}$$

USE h formula $V = 200 \text{ cu ft}$

$$r = 12 \text{ ft} \quad \pi = 3.14$$

$$h = \frac{3(200)}{3.14(12)^2} = \frac{600}{452.16} = 1.326$$

$$\text{height is } 1.33 \text{ ft}$$

11

$$A = P + P \cdot r \cdot t \quad \text{solve for "r"}$$

$$\frac{A - P}{P \cdot t} = \frac{P \cdot r \cdot t}{P \cdot t}$$

$$r = \frac{A - P}{P \cdot t}$$

12

$$\frac{2}{3}y + 4 = 2x$$

function form means solve for "y" in terms of "x"

$$\left(\frac{3}{2}\right) \frac{2}{3}y = \frac{3}{2}(2x - 4)$$

$$y = 3x - 6$$

Remember put variable term first and constant last.

13

$$\frac{1}{7}(49 - 7y) = 5x + 3y + 14$$

$$7 - y = 5x + 3y + 14$$

$$7 - 4y = 5x + 14$$

$$\frac{-4y}{-4} = \frac{5x + 7}{-4}$$

$$y = -\frac{5}{4}x - \frac{7}{4}$$

14

Key Info: 32 mpg
22.5 gal gas

FIND

X = # of gal gas (total)

Proportion: $\frac{\text{miles}}{\text{Gal Gas}} = \frac{32}{1} = \frac{X}{22.5}$

$$X = (32)(22.5)(1)$$

$$X = 723.2$$

Travel 723.2
total miles

15

KI: nonmembers: \$8/day

members: \$150 annual fee plus \$2/day

X = # days play volley ball

EQ: Non Member = Member

$$\begin{array}{r} 8X \\ - 2X \\ \hline \end{array} = \begin{array}{r} 150 \\ + 2X \\ - 2X \\ \hline \end{array}$$

$$\frac{6X}{6} = \frac{150}{6}$$

$$X = 25$$

To justify being a member, you must play more than 25 days per year

16 KI: live 15 miles apart



H = # Hours jogged

EQ $15 - 2.5x = 3.5x$ OR $2.5x = 15 - 3.5x$

$$\frac{15 = 6x}{6} \\ \boxed{x = 2.5}$$

C: $15 - 2.5(2.5) = 3.5(2.5)$
 $8.75 = 8.75$

→ Kelly jogged 8.75 miles
Tanya jogged $15 - 8.75 = 6.25 \text{ mi}$
This makes sense

It will take
2.5 hours for the
friends to meet

17 KI: Dig 100 TONS TOGETHER
Doug digs 16 tons/day
Sid digs 10 tons/day

Doug starts and 3
days later Sid starts

$x = \#$ of days Doug digs most decide who will be x (sid = $x - 3$)

EQ: DOUG + SID = 100
 $16x + 10(x - 3) = 100$
Solve $16x + 10x - 30 = 100$
 $26x - 30 = 100$

$$\frac{26x = 130}{26} \quad \boxed{x = 5}$$

C: $16(5) + 10(5 - 3) = 100$
 $80 + 20 = 100 \checkmark$
↑ ↑
Doug Sid

DOUG DIGS FOR 5 DAYS.
DOUG DIGS 80 TONS AND SID 20 TONS COAL

118

$$27.4Y - 11.2 = 7.3Y - 12.6$$

$$\begin{array}{r} -7.3Y \\ \hline 20.1Y - 11.2 = -12.6 \end{array}$$

$$20.1Y - 11.2 = -12.6$$

$$\begin{array}{r} +11.2 \quad +11.2 \\ \hline 20.1Y = -1.4 \end{array}$$

$$20.1Y = -1.4$$

$$\begin{array}{r} \underline{20.1} \quad \underline{20.1} \\ 20.1Y = -1.4 \end{array}$$

$$Y = -0.069$$

$$Y = -0.07$$

$$C: 27.4(-0.07) - 11.2 = 7.3(-0.07) - 12.6$$

$$-13.118 \approx -13.111$$

A APPROXIMATE SYMBOL
#s are NOT EXACT DUE
TO ROUNDING THE SOLUTION

119

$$7x - 29 - 21x = 3 - (12 + 2x)$$

$$-14x - 29 = 3 - 12 - 2x$$

$$-14x - 29 = -2x - 9$$

$$\begin{array}{r} +14x \quad +14x \\ \hline -29 = -2x - 9 \end{array}$$

$$-29 = -2x - 9$$

$$\begin{array}{r} +9 \quad +9 \\ \hline -20 = -2x \end{array}$$

$$\begin{array}{r} \underline{-20} = \underline{-2x} \\ \underline{12} \quad \underline{12} \end{array}$$

$$X = \frac{-20}{12}$$

NOT AN INTEGER →
LEAVE AS IMPROPER
fraction

$$X = \frac{-5}{3}$$

$$C: 7\left(-\frac{5}{3}\right) - 29 - 21\left(-\frac{5}{3}\right) = 3 - (12 + 2\left(-\frac{5}{3}\right))$$

↑

$$-5.6\bar{6} = -5.6\bar{6}$$

TIP: USE ()'S WHEN SUBSTITUTING TO MAKE
SURE FRACTION IS EVALUATED CORRECTLY.