Name: _T-copy_

Date: _____

Unit 1 – Equations: Review

1. For each term provided, state 2 more like terms.
   a) $3x^3$, _$4x^3$_, _$-2x^3$_

   b. $-2x$, _$4x$_, _$9x$_

Recall: **To simplify means** _to collect like terms_

_____

2. Simplify the following by combining like terms
   a) $4a + 2a$

   $= 6a$

   c) $5x^2 - 2x + 4x^2 - 3x$

   $= 9x^2 - 5x$

   e) $5x^2 - 2x + 4 - 3x^2$

   $= 2x^2 - 2x + 4$

   b) $5x^2 - 12x^2$

   $= -7x^2$

   d) $6x^2 + 4x - 5x^2 + 9x$

   $= 1x^2 + 13x$

   c) $4g + 6g - 3 + 2g$

   $= 12g - 3$

3. Expand the following and then collect like terms if necessary.
   a) $2(x - 2)$

   $= 2x - 4$

   c) $5(y - 1) + 4(2y + 3)$

   $= 5y - 5 + 8y + 12$

   $= 13y + 7$

   b) $3(2x^2 - x) - 1(5x^2 - 6x)$

   $= 6x^2 - 3x - 5x^2 + 6x$

   $= x^2 + 3x$

   d) $3(2x - 4)$

   $= 6x - 12$

Recall: **To solve means** to isolate the unknown variable to determine its value

4. Solve each of the following linear equations   [4]

a) $3x = 24$
$$\frac{3}{3} \quad \frac{24}{3}$$
$\boxed{x = 8}$

c) $k - 4 = 13$
$$k = 13 + 4$$
$\boxed{K = 17}$

e) $\frac{s}{4} = 5$ ×4
$\boxed{S = 20}$

g) $3 = 2x + 7$
$$3 - 7 = 2x$$
$$\frac{-4}{2} = \frac{2x}{2}$$
$\boxed{-2 = x}$

b) $4x = 22$
$$\frac{4}{4} \quad \frac{22}{4}$$
$\boxed{x = \frac{11}{2}}$
or
$x = 5.5$

d) $y + 2 = 11$
$$y = 11 - 2$$
$\boxed{y = 9}$

f) $\frac{t}{5} = 30$ ×5
$\boxed{t = 150}$

h) $2x - 4 = 18$
$$2x = 18 + 4$$
$$\frac{2x}{2} = \frac{22}{2}$$
$\boxed{x = 11}$

5. Check questions 4g and 4h

(g)

LS	RS
$= 3$	$2x + 7$
	$= 2(-2) + 7$
	$= -4 + 7$ ✓
	$= 3$

(h)

LS	RS
$= 2x - 4$	$= 18$
$= 2(11) - 4$	
$= 22 - 4$ ✓	
$= 18$	

6. Solve the following equations

a) $4w - 4 = 2w + 6$
$$4w - 2w = 6 + 4$$
$$\frac{2w}{2} = \frac{10}{2}$$
$\boxed{w = 5}$

b) $3(x + 2) = 4(x - 5)$
$$3x + 6 = 4x - 20$$
$$3x - 4x = -20 - 6$$
$$\frac{-x}{-1} = \frac{-26}{-1}$$
$\boxed{x = 26}$

b) $\frac{r+2}{3} = -5$ ×3 ×3

$r + 2 = -15$

$r = -15 - 2$

$\boxed{r = -17}$

d) $\frac{q+3}{3} = \frac{q-5}{2}$ LCD = 6

$\overset{2}{\cancel{6}(q+3)} = \overset{3}{\cancel{6}(q-5)}$
$\overline{\cancel{3}} \qquad \overline{\cancel{2}}$

$2(q+3) = 3(q-5)$

$2q + 6 = 3q - 15$

$2q - 3q = -15 - 6$

$\frac{-q}{-1} = \frac{-21}{-1}$

$\boxed{q = 21}$

7. Evelyn has 1 horses, and 10 chickens. The equation $C = 8d + 100$, represents the total cost, C, to feed the animals for a certain number of days, d. If Evelyn has $2700 could she feed them for the entire year?

$C = 8d + 100$

$2700 = 8d + 100$

$2700 - 100 = 8d$

$\frac{2600}{8} = \frac{8d}{8}$

$325 = d$

not 365

∴ She could NOT feed them for a year

8. Use the simple interest formula $I = Prt$, to find the amount that needs to be invested at 4% per year for 20 years in order to earn $6000 in interest.

$r = 0.04$ ÷100   t   I

$I = Prt$

$6000 = P(0.04)(20)$

$\frac{6000}{0.8} = \frac{0.8P}{0.8}$

$7500 = P$

∴ $7500 would need to be invested

9. Use the formula $d = st$ to determine Dakota's speed in kilometers per hour if he runs 10 km in 0.95 hours.

$$d = st$$

$$\frac{10}{0.95} = \frac{s(0.95)}{0.95}$$

$$10.5 = s \text{ km/h}$$

10. One measure of a baseball pitcher's performance is WHIP, walks and hits per inning pitched. This statistic relates the number of runners who get on base per inning, r, to the total number of walks, w, the total number of hits, h, and the total number of innings pitched, I, according to the formula $r = \frac{w+h}{i}$. Determine Jesse's WHIP based on the following stats.

Walks: 18

Hits: 35

Total Innings: 40

$$r = \frac{18 + 35}{40}$$

$$r = \frac{53}{40}$$

$$r = 1.325$$

$$\therefore WHIP = 1.325$$

11. The equation $s = \frac{w-10e}{t}$, models the speed in words per minute, s, at which someone types. The speed, s, is related to the number of words typed, w, the number of errors, e, and the time spent typing in minutes, t. If Jaycee types 500 words in 6 min, with 8 errors, what is her typing speed?

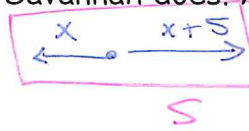$$s = \frac{500 - 10(8)}{6}$$

$$s = \frac{500 - 80}{6}$$

$$s = \frac{420}{6}$$

$$s = 70 \text{ words/min}$$

12. Savannah and India leave the same place at the same time and drive in opposite directions. India drives 5 km/h faster than Savannah does. After 2 hr, they are 255 km apart. How fast is each driving?

[3]

$$d = st$$
$$255 = (x + x + 5)(2)$$
$$255 = (2x + 5)(2)$$
$$255 = 4x + 10$$
$$255 - 10 = 4x$$
$$\frac{245}{4} = \frac{4x}{4}$$
$$61.25 = x$$

Savannah = x
= 61.25 km/h

India = x + 5
= 61.25 + 5
= 66.25 km/h