① simplify each side of equal sign (PEMDAS)
② Undo addition + subtraction
③ Undo multiplication + division

Geometry DAY 2.1
Prerequisite Skills

Name: _____

Date: _____

SOLVING LINEAR EQUATIONS – solve for x.

1. $7x - 2 = 12$
$+2 \quad +2$
$\frac{7x}{7} = \frac{14}{7}$
$x = 2$

2. $2x - 8 = 4x + 12$
$-2x \quad -2x$
$-8 = 2x + 12$
$-12 \quad -12$
$\frac{-20}{2} = \frac{2x}{2}$
$-10 = x$
$x = -10$

3. $2(3x + 1) = 2x - 2$
$6x + 2 = 2x - 2$
$-2x \quad -2x$
$4x + 2 = -2$
$-2 \quad -2$
$\frac{4x}{4} = \frac{-4}{4}$
$x = -1$

SOLVING PROPORTIONS – solve for x. Cross multiply

4. $\frac{x}{3} = \frac{12}{4}$
$4 \cdot x = 3 \cdot 12$
$\frac{4x}{4} = \frac{36}{4}$
$x = 9$

5. $\frac{10}{2} = \frac{x-2}{12}$
$10 \cdot 12 = 2(x-2)$
$120 = 2x - 4$
$+4 \quad +4$
$\frac{124}{2} = \frac{2x}{2}$
$62 = x$
$x = 62$

6. $\frac{x-8}{5} = \frac{x-6}{6}$
$6(x-8) = 5(x-6)$
$6x - 48 = 5x - 30$
$-5x \quad -5x$
$x - 48 = -30$
$+48 \quad +48$
$x = 18$

COMPLIMENTARY, SUPPLEMENTARY, & CONGRUENT ANGLES – solve for x.

Complimentary **Angles:** Two angles whose sum is 90 degrees.

Supplementary **Angles:** Two angles whose sum is 180 degrees.

Congruent **Angles:** Two or more angles with the same measure.

7. Solve for x if ∠1 and ∠2 are complimentary. Then find each angle measure.
∠1 = x – 7
∠2 = 4x + 2
$\angle 1 + \angle 2 = 90°$
$x - 7 + 4x + 2 = 90°$
$5x - 5 = 90°$
$5x = 95°$
$x = 19$
$\angle 1 = x - 7$
$\angle 1 = 19 - 7$
$\angle 1 = 12°$
$\angle 2 = 4x + 2$
$\angle 2 = 4(19) + 2$
$\angle 2 = 76 + 2$
$\angle 2 = 78°$

8. Solve for x if ∠1 and ∠2 are supplementary. Then find each angle measure.
∠1 = 10x – 1
∠2 = 7x + 11
$\angle 1 + \angle 2 = 180°$
$10x - 1 + 7x + 11 = 180°$
$17x + 10 = 180°$
$17x = 170°$
$x = 10$
$\angle 1 = 10x - 1$
$\angle 1 = 10(10) - 1$
$\angle 1 = 100 - 1$
$\angle 1 = 99°$
$\angle 2 = 7x + 11$
$\angle 2 = 7(10) + 11$
$\angle 2 = 70 + 11$
$\angle 2 = 81°$

9. Solve for x if ∠1 and ∠2 are congruent. Then find each angle measure.
∠1 = 2x + 1
∠2 = 6x – 7
$\angle 1 = \angle 2$
$2x + 1 = 6x - 7$
$-2x \quad -2x$
$1 = 4x - 7$
$+7 \quad +7$
$\frac{8}{4} = \frac{4x}{4}$
$2 = x$
$x = 2$
$\angle 1 = 2x + 1$
$\angle 1 = 2(2) + 1$
$\angle 1 = 5°$
$\angle 2 = 6x - 7$
$\angle 2 = 6(2) - 7$
$\angle 2 = 5°$

WHITE BOARD PRACTICE PROBLEMS!

1. $-5x = -90$

$x = 18$

2. $x + 17 = 4$

$x = -13$

3. $3(6p + 1) = 147$

$18p + 3 = 147$

$18p = 144$

$p = 8$

4. $\angle 1$ and $\angle 2$ are congruent. Solve for x.

$\angle 1 = 1 - 8x$

$\angle 2 = -6x - 5$

$1 - 8x = -6x - 5$

$+8x \quad +8x$

$1 = 2x - 5$

$+5 \quad +5$

$6 = 2x$

$x = 3$

5. $\frac{10}{5} = \frac{x}{10}$ cross multiply

$10 \cdot 10 = 5 \cdot x$

$100 = 5x$

$20 = x$

6. $\frac{3}{6} = \frac{5}{b}$

$3b = 30$

$b = 10$

7. $-4m - 8 = 4 + 2m$

$+4m \quad +4m$

$-8 = 4 + 6m$

$-12 = 6m$

$-2 = m$

8. $\frac{x - 10}{10} = \frac{5}{2}$

$2(x - 10) = 50$

$2x - 20 = 50$

$2x = 70$

$x = 35$

9. $\angle 1$ and $\angle 2$ are supplementary. Solve for x.

$\angle 1 = 5x + 12$

$\angle 2 = 2x + 7$

$5x + 12 + 2x + 7 = 180$

$7x + 19 = 180$

$7x = 161$

$x = 23$

10. $\frac{x - 4}{x - 1} = \frac{3}{6}$

$3(x - 1) = 6(x - 4)$

$3x - 3 = 6x - 24$

$-3 = 3x - 24$

$+24 \quad +24$

$21 = 3x$

$7 = x$

11. $-17 = \frac{x}{10}$ (10)

$x = -170$

12. $-(2n - 7) = -5(7 + n)$

$-2n + 7 = -35 - 5n$

$3n = -42$

$n = -14$

13. $\frac{m + 8}{10} = \frac{m - 2}{9}$

$9(m + 8) = 10(m - 2)$

$9m + 72 = 10m - 20$

$92 = m$

14. $\angle 1$ and $\angle 2$ are complimentary. Solve for x.

$\angle 1 = 8x - 10$

$\angle 2 = 12x$

$8x - 10 + 12x = 90$

$20x - 10 = 90$

$20x = 100$

$x = 5$

15. $\frac{x - 5}{x + 1} = \frac{4}{5}$

$4(x + 1) = 5(x - 5)$

$4x + 4 = 5x - 25$

$29 = x$