Geometry, Ch 2-5, Exercises, pg 101, #6-20 [even], 21-25, 29-32, 35-36a

Solve the equation. Write a reason for each step.

6. $5x - 10 = -40$

$5x = -30$ Add'n Prop of Equality

$x = -6$ Mult Prop of Equality [mult by $\frac{1}{5}$]

8. $5(3x - 20) = -10$

$15x - 100 = -10$ Dist. Prop.

$15x = 90$ Add'n Prop

$x = 6$ Mult Prop [mult by $\frac{1}{15}$]

10. $2(-x - 5) = 12$

$-2x - 10 = 12$ Dist Prop

$-2x = 22$ Add'n Prop.

$x = -11$ Mult Prop.

12. $4(5x - 9) = -2(x + 7)$

$20x - 36 = -2x - 14$ Dist Prop.

$22x - 36 = -14$ Add'n Prop [add $2x$]

$22x = 22$ Add'n Prop [add 36]

$x = 1$ Mult Prop

14. $3(7x-9) - 19x = -15$

$21x - 27 - 19x = -15$ Dist Prop.

$2x - 27 = -15$ Substitution $[21x - 19x = 2x]$

$2x = 12$ Add'n Prop.

$x = 6$ Mult Prop.

Solve the equation for y. Write a reason for each step.

16. $-4x + 2y = 8$

$2y = 4x + 8$ Add'n Prop

$y = \frac{1}{2}(4x+8)$ Mult Prop [mult by $\frac{1}{2}$]

$y = 2x + 4$ Dist. Prop.

18. $3x + 9y = -7$

$9y = -3x - 7$ Subt. Prop.

$y = \frac{1}{9}(-3x-7)$ Mult Prop [mult by $\frac{1}{9}$]

$y = -\frac{1}{3}x - \frac{7}{9}$ Dist. Prop.

20. $\frac{1}{2}x - \frac{3}{4}y = -2$

$4\left[\frac{1}{2}x - \frac{3}{4}y\right] = 4[-2]$ Mult Prop [used to clear fractions]

$2x - 3y = -8$ Dist Prop.

$-3y = -2x - 8$ Subt. Prop.

$y = -\frac{1}{3}[-2x-8]$ Mult Prop. [mult by $-\frac{1}{3}$]

$y = \frac{2}{3}x + \frac{8}{3}$ Dist Prop.

Use the property to complete each statement.

21. Substitution: If $AB = 20$, then $AB + CD =$ $\underline{20 + CD}$

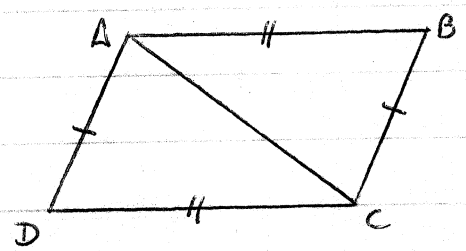
22. Symmetric: If $m\angle 1 = m\angle 2$, then $\underline{m\angle 2 = m\angle 1}$

23. Add'n Prop: If $AB = CD$, then $\underline{AB}$ $+ EF =$ $\underline{CD}$ $+ EF$

24. Dist. Prop.: If $5(x+8) = 2$, then $\underline{5}\,x + \underline{40} = 2$

25. Transitive: If $m\angle 1 = m\angle 2$ and $m\angle 2 = m\angle 3$, then $\underline{m\angle 1 = m\angle 3}$

29. Show that the perimeter of ΔABC equals perimeter of ΔADC.



Perim of ΔABC = $AB + BC + AC$

Perim of ΔADC = $CD + AD + AC$

$AB = CD$	Given
$\boxed{AB} + AD + AC$	Substitution
$BC = AD$	Given
$AB + \boxed{BC} + AC$	Substitution

Perim of ΔADC = $AB + BC + AC$ = Perim of ΔABC.

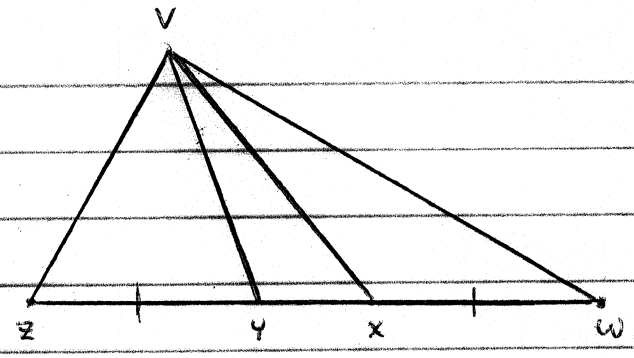
30. In the figure $\overline{ZY} = \overline{XW}$,

$ZX = 5x + 17$,

$YW = 10 - 2x$,

$YX = 3$.

Find ZY and XW.



Statement	Reason
$ZY = XW$	Given
$ZY + YX = XW + YX$	Add'n Prop
$ZX = YW$	Segment Add'n
$5x + 17 = 10 - 2x$	Substitution
$7x + 17 = 10$	Add'n Prop [add 2x to each side]
$7x = -7$	Subt. Prop.
$x = -1$	Mult. Prop. [mult by $\frac{1}{7}$]

$ZX = 5(-1) + 17$ $\qquad$ $YW = 10 - 2(-1)$

$ZX = 12$ $\qquad$ $YW = 12$

$ZY + YX = ZX$ $\qquad$ $YX + XW = YW$

$ZY + 3 = 12$ $\qquad$ $3 + XW = 12$

$\boxed{ZY = 9}$ $\qquad$ $\boxed{XW = 9}$

31. The formula for the perimeter P of a rectangle is $P = 2l + 2w$ where l is length and w is width. Solve the formula for l. Use this formula to find length of a rectangular lawn whose perimeter is 55 meters and whose width is 11 meters.

$$P = 2l + 2w$$
$$P - 2w = 2l$$
$$\frac{1}{2}(P - 2w) = l$$
$$\frac{1}{2}P - w = l$$

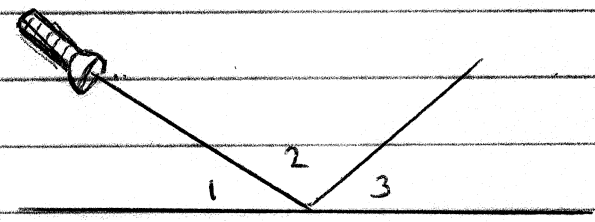
$$l = \frac{1}{2}(55) - 11$$
$$l = 27.5 - 11$$
$$\boxed{l = 16.5}$$

32. The formula for the area A of a triangle is $A = \frac{1}{2}bh$, where b is the base, and h is the height. Solve the formula for h. Use this formula to find height of a triangle whose area is 1768 square inches, and whose base is 52 inches.

$$A = \frac{1}{2}bh$$
$$2A = bh$$
$$\frac{2A}{b} = h$$

$$h = \frac{2(1768)}{(52)}$$
$$\boxed{h = 68}$$

35. A flashlight beam is reflected off a mirror. Use the info given to find $m\angle 2$.



- $m\angle 1 + m\angle 2 + m\angle 3 = 180^\circ$
- $m\angle 1 + m\angle 2 = 148^\circ$
- $m\angle 1 = m\angle 3$

$\angle 1 = 148 - \angle 2$

$\angle 3 = 148 - \angle 2$

$$\angle 1 + \angle 2 + \angle 3 = 180$$
$$148 + \angle 3 = 180$$
$$148 + 148 - \angle 2 = 180$$
$$296 - \angle 2 = 180$$
$$-\angle 2 = -116$$
$$\boxed{\angle 2 = 116^\circ}$$

36. The formula to convert Fahrenheit (°F) to Celcius (°C) is $C = \frac{5}{9}(F-32)$.

a. Solve the formula for F.

$C = \frac{5}{9}(F-32)$	Given
$\frac{9}{5}C = F - 32$	Mult Prop [mult by $\frac{9}{5}$]
$\frac{9}{5}C + 32 = F$	Add'n Prop.