Pg. 114 (4-26)

(4) $30^\circ + 90^\circ + x^\circ = 180^\circ$

$120^\circ + x^\circ = 180^\circ$

$-120^\circ \quad -120$

$x = 60^\circ$

Double check°

30
90
60
180° ✓ ☺

(5) $65^\circ + 40^\circ + x^\circ = 180^\circ$

$105^\circ + x^\circ = 180^\circ$

$-105^\circ \quad -105^\circ$

$x = 75^\circ$

Double check°

65
40
75
180 ☺

(6) $35^\circ + 45^\circ + x^\circ = 180$

$80^\circ + x^\circ = 180^\circ$

$-80^\circ \quad -80^\circ$

$x = 100^\circ$

Double check

100
35
45
180° ☺

(7) $\overbrace{x + x}^{2x} + 65 + 25 = 180^\circ$

90°

$2x^\circ + 90^\circ = 180^\circ$

$-90^\circ \quad -90^\circ$

$\frac{2x^\circ}{2} = \frac{90^\circ}{2}$

$x = 45^\circ$

Don't forget to calculate $x + 65^\circ$

$x + 65$

$45 + 65 = 110^\circ$

Double check°

110
45
25
180° ☺

(8) $\overbrace{x^\circ + 48^\circ + x}^{2x} - 44^\circ = 180^\circ$

Don't forget to calculate $x - 44^\circ$

$2x^\circ + 4 = 180^\circ$

$-4 \quad -4^\circ$

$\frac{2x^\circ}{2} = \frac{176^\circ}{2}$

$x = 88^\circ$

$x - 44$

$88 - 44 = 44^\circ$

Double check°

288
44
48
180° ☺

(9) $x^\circ + 73^\circ + x - 11^\circ = 180^\circ$

$2x + 62^\circ = 180^\circ$

$-62^\circ \quad -62^\circ$

$\frac{2x}{2} = \frac{118^\circ}{2}$

$x = 59^\circ$

$x - 11 = 48^\circ$

$2\overline{)118}$ 59, -10, 18

Don't forget to calculate $x - 11^\circ$

$x = 59$

$x - 11$

$59 - 11 = 48^\circ$

Double check

$59 + 48 + 73 = 180^\circ$ ☺

(10) $60^\circ + x^\circ + x^\circ = 180^\circ$

$60^\circ + 2x^\circ = 180^\circ$

$\frac{2x}{2} = \frac{120^\circ}{2}$

$x = 60^\circ$

Double check: $60 + 60 + 60 = 180^\circ$ (11)

(11) $x^\circ + 2x^\circ + 45^\circ = 180^\circ$

$3x + 45^\circ = 180^\circ$

$-45^\circ \quad -45^\circ$

$\frac{3x^\circ}{3} = \frac{135^\circ}{3}$

$3\overline{)135}$ → 45

-12

15

$x = 45^\circ$

Don't forget to calculate 2x

$2x = 45 \cdot 2 = 90^\circ$

Double check:

45

90

45

180° (11)

(12) 90

+38 47

128° (add interior angles that are not adjacent to exterior angle.)

$x = 128^\circ$

(13) 64

+76

140°

$x = 140^\circ$

(14) Since two interior angles add up to the exterior angle, write an equation:

$2a = a + 10 + 44$

$2a = a + 54$

$-a \quad -a$

$a = 54$

So, $2a = 2 \times 54$

$2a = 108^\circ$

Double check: $54 + 10 + 44 = 108$ (11)

(15) They said the sum of the two interior angles plus the exterior angle equals 180°, when only the three interior angles add up to 180°. The relationship should be the two interior angles added equal the exterior angle.

$30 + x = 2x - 12$

$-x \quad -x$

$30 = x - 12$

$+12 \quad +12$

$x = 42$

(16)

$2:3:5$

$2x+3x+5x=180^\circ$

$10x=180^\circ$

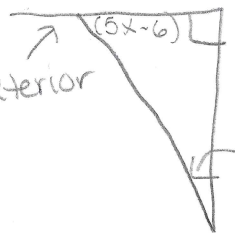
$x=18^\circ$

$2x=36^\circ$

$3x=54^\circ$

$5x=90^\circ$

(17)



only add the two interior angles that are not adjacent to the exterior angle, when calculating the ext angle

1st: You need to solve for x.

1st: write an equation with the interior angles.

$5x-6+90+3x=180$

$8x+84=180$

$-84\quad -84$

$8x=96$

$x=12$

$8\overline{)96}$ → 12, -8, 16, -16, 0

2nd

$3x=3\cdot12=36$

$36+90=126^\circ$

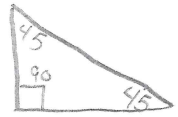
exterior angle $=126^\circ$

(18)

You need more info. You can find what the adjacent interior angle is, (x), since they are supplementary angles. Yet, there is no relationship to help you find the remaining 2 interior angles.

(19) sometimes → if the angle measures add up to exactly 180°, otherwise it is not a triangle.

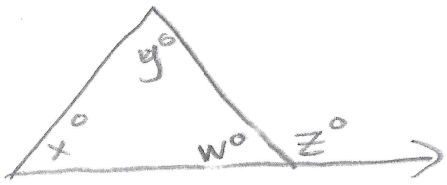
(20)



always, if you have a 90° angle, the remaining angles must add up to 90° for it to = 180°

(21) never, if a triangle had more than one vertex with an acute exterior angle, then it would have to have more than one obtuse interior angle, which is impossible!

(22)



$x + y + w = 180°$ (sum of all int angles)

$w + z = 180°$ (supplementary angles)

since both equations equal 180°, they must be equal.

$$x + y + w = w + z$$
$$-w \quad -w$$
$$x + y = z$$