

1.8

- 1) When five is added to three more than a certain number, the result is 19. What is the number?

$$\begin{aligned}x + 3 + 5 &= 19 \\x + 8 &= 19 \\ \underline{-8 \quad -8} & \\x &= 11\end{aligned}$$

- 3) When 18 is subtracted from six times a certain number, the result is  $-42$ . What is the number?

$$\begin{aligned}6x - 18 &= -42 \\ \underline{+18 \quad +18} & \\ \frac{6x}{6} &= \frac{-24}{6} \\x &= -4\end{aligned}$$

- 5) A number plus itself, plus twice itself, plus 4 times itself, is equal to  $-104$ . What is the number?

$$\begin{aligned}x + x + 2x + 4x &= -104 \\ \frac{8x}{8} &= \frac{-104}{8} \\x &= -13\end{aligned}$$

- 7) Eleven less than seven times a number is five more than six times the number. Find the number.

$$\begin{aligned}7x - 11 &= 6x + 5 \\ \underline{-6x \quad -6x} & \\x - 11 &= 5 \\ \underline{+11 \quad +11} & \\x &= 16\end{aligned}$$

- 9) The sum of three consecutive integers is 108. What are the integers?

*F*:  $x$

*S*:  $x + 1$

*T*:  $x + 2$

$$\begin{aligned}3x + 3 &= 108 \\ \underline{-3 \quad -3} & \\ \frac{3x}{3} &= \frac{105}{3} \\x &= 35\end{aligned}$$

35, 36, 37

- 11) Find three consecutive integers such that the sum of the first, twice the second, and three times the third is  $-76$ .

$$\begin{array}{l}
 F: x \quad \rightarrow x \\
 2S: 2(x + 1) \rightarrow 2x + 2 \\
 3T: 3(x + 2) \rightarrow \underline{3x + 6} \\
 \hline
 6x + 8 = -76 \\
 \underline{-8 \quad -8} \\
 \frac{6x}{6} = \frac{-84}{6} \\
 x = -14 \qquad -14, -13, -12
 \end{array}$$

- 13) The sum of three consecutive odd integers is 189. What are the integers?

$$\begin{array}{l}
 F: x \\
 S: x + 2 \\
 T: x + 4 \\
 \hline
 3x + 6 = 189 \\
 \underline{-6 \quad -6} \\
 \frac{3x}{3} = \frac{183}{3} \\
 x = 61 \qquad 61, 63, 65
 \end{array}$$

- 15) Find three consecutive odd integers such that the sum of the first, two times the second, and three times the third is 70.

$$\begin{array}{l}
 F: x \quad \rightarrow x \\
 2S: 2(x + 2) \rightarrow 2x + 4 \\
 3T: 3(x + 4) \rightarrow \underline{3x + 12} \\
 \hline
 6x + 16 = 70 \\
 \underline{-16 \quad -16} \\
 \frac{6x}{6} = \frac{54}{6} \\
 x = 9 \qquad 9, 11, 13
 \end{array}$$

- 17) Two angles of a triangle are the same size. The third angle is 12 degrees smaller than the first angle. Find the measure the angles.

$$\begin{array}{l}
 F: x \qquad (64) \\
 S: x \qquad (64) \\
 T: x - 12 \qquad (64 - 12 = 52) \\
 \hline
 3x - 12 = 180 \\
 \underline{+12 \quad +12} \\
 \frac{3x}{3} = \frac{192}{3} \\
 x = 64 \qquad 64^\circ, 64^\circ, 52^\circ
 \end{array}$$

- 19) The third angle of a triangle is the same size as the first. The second angle is 4 times the third. Find the measure of the angles.

$$\begin{array}{ll}
 F: x & (30) \\
 S: 4x & (4 \cdot 30 = 120) \\
 T: \underline{x} & (30) \\
 \frac{6x}{6} = \frac{180}{6} & \\
 x = 30 & 30^\circ, 120^\circ, 30^\circ
 \end{array}$$

- 21) The second angle of a triangle is twice as large as the first. The measure of the third angle is 20 degrees greater than the first. How large are the angles?

$$\begin{array}{ll}
 F: x & (40) \\
 S: 2x & (2 \cdot 40 = 80) \\
 T: \underline{x + 20} & (40 + 20 = 60) \\
 4x + 20 = 180 & \\
 \underline{-20 \quad -20} & \\
 \frac{4x}{4} = \frac{160}{4} & \\
 x = 40 & 40^\circ, 80^\circ, 60^\circ
 \end{array}$$

- 23) The second angle of a triangle is five times as large as the first. The measure of the third angle is 12 degrees greater than that of the first angle. How large are the angles?

$$\begin{array}{ll}
 F: x & (24) \\
 S: 5x & (5 \cdot 24 = 120) \\
 T: \underline{x + 12} & (24 + 12 = 36) \\
 7x + 12 = 180 & \\
 \underline{-12 \quad -12} & \\
 \frac{7x}{7} = \frac{168}{7} & \\
 x = 24 & 24^\circ, 120^\circ, 36^\circ
 \end{array}$$

- 25) The second angle of a triangle is four times the first and the third is 5 degrees more than twice the first. Find the measures of the angles.

$$\begin{array}{ll}
 F: x & (25) \\
 S: 4x & (4 \cdot 25 = 100) \\
 T: \underline{2x + 5} & (2 \cdot 25 + 5 = 50 + 5 = 55) \\
 7x + 5 = 180 & \\
 \underline{-5 \quad -5} & \\
 \frac{7x}{7} = \frac{175}{7} & \\
 x = 25 & 25^\circ, 100^\circ, 55^\circ
 \end{array}$$

27) The perimeter of a rectangle is 304 cm. The length is 40 cm longer than the width. Find the length and width.

$$L: x + 40 \quad (56 + 40 = 96)$$

$$W: \underline{x} \quad (56)$$

$$2(2x + 40) = 304$$

$$4x + 80 = 304$$

$$\underline{-80 \quad -80}$$

$$\frac{4x}{4} = \frac{224}{4}$$

$$x = 56$$

$$56 \times 96$$

29) The perimeter of a rectangle is 280 meters. The width is 26 meters less than the length. Find the length and width.

$$L: x \quad (83)$$

$$W: \underline{x - 26} \quad (83 - 26 = 57)$$

$$2(2x - 26) = 280$$

$$4x - 52 = 280$$

$$\underline{+52 \quad +52}$$

$$\frac{4x}{4} = \frac{332}{4}$$

$$x = 83$$

$$57 \times 83$$

31) A mountain cabin on 1 acre of land costs \$30,000. If the land cost 4 times as much as the cabin, what was the cost of each?

$$C: x \quad (6000)$$

$$L: \underline{4x} \quad (4 \cdot 6000 = 24000)$$

$$\frac{5x}{5} = \frac{30000}{5}$$

$$x = 6000$$

$$\text{Cabin: } \$6,000, \text{ Land: } \$24,000$$

33) A bicycle and a bicycle helmet cost \$240. How much did each cost, if the bicycle cost 5 times as much as the helmet?

$$B: 5x \quad (5 \cdot 40 = 200)$$

$$H: \underline{x} \quad (40)$$

$$\frac{6x}{6} = \frac{240}{6}$$

$$x = 40$$

$$\text{Bike: } \$200, \text{ Helmet: } \$40$$

35) If Mr. Brown and his son together had \$220, and Mr. Brown had 10 times as much as his son, how much money had each?

$$B: 10x \quad (10 \cdot 20 = 200)$$

$$S: \underline{x} \quad (20)$$

$$\frac{11x}{11} = \frac{220}{11}$$

$$x = 20$$

$$\text{Mr. Brown: } \$200, \text{ Son: } \$20$$

37) Aaron had 7 times as many sheep as Beth, and both together had 608. How many sheep had each?

$$A: 7x \quad (7 \cdot 76 = 532)$$

$$B: x \quad (76)$$

$$\frac{8x}{8} = \frac{608}{8}$$

$$x = 76$$

*Aaron: 532 Sheep, Beth: 76 Sheep*

39) Jamal and Moshe began a business with a capital of \$7500. If Jamal furnished half as much capital as Moshe, how much did each furnish?

$$J: x \quad (2500)$$

$$M: 2x \quad (2 \cdot 2500 = 5000)$$

$$\frac{3x}{3} = \frac{7500}{3}$$

$$x = 2500$$

*Jamal: \$2500, Moshe: \$5000*

41) A 6 ft board is cut into two pieces, one twice as long as the other. How long are the pieces?

$$L: 2x \quad (2 \cdot 2 = 4)$$

$$S: x \quad (2)$$

$$\frac{3x}{3} = \frac{6}{3}$$

$$x = 2$$

*4ft & 2ft*

43) An electrician cuts a 30 ft piece of wire into two pieces. One piece is 2 ft longer than the other. How long are the pieces?

$$L: x + 2 \quad (14 + 2 = 16)$$

$$S: x \quad (14)$$

$$2x + 2 = 30$$

$$\begin{array}{r} -2 \quad -2 \\ \hline \end{array}$$

$$\frac{2x}{2} = \frac{28}{2}$$

$$x = 14$$

*16ft & 14ft*

45) The cost of a private pilot course is \$1,275. The flight portion costs \$625 more than the ground school portion. What is the cost of each?

$$F: x + 625 \quad (325 + 625 = 950)$$

$$G: x \quad (325)$$

$$2x + 625 = 1275$$

$$\begin{array}{r} -625 \quad -625 \\ \hline \end{array}$$

$$\frac{2x}{2} = \frac{650}{2}$$

$$x = 325$$

*Flight: \$950, Ground: \$325*