Direct proportion

Problem 1 of 6

Question

Determine if $2(y - 3) + 3(x + 2) = 0$ defines a direct proportion.

Answer

$$2(y - 3) + 3(x + 2) = 0$$

$$2y - 6 + 3x + 6 = 0$$

$$2y + 3x - \cancel{6} + \cancel{6} = 0$$

$$2y + 3x = 0$$

$$2y + 3x - 3x = 0 - 3x$$

$$2y = -3x$$

$$\frac{\cancel{2}y}{2} = \frac{-3x}{2}$$

$$y = \frac{-3}{2}x$$

$$\boxed{y = kx \; ; \; k = \frac{-3}{2}}$$

Problem 2 of 6

Question

Determine if $4y + 4x + 4 = 0$ defines a direct proportion.

Answer

$$4y + 4x + 4 = 0$$

$$4y + 4x + 4 - 4 = 0 - 4$$

$$4y + 4x = -4$$

$$4y + 4x - 4x = -4x - 4$$

$$4y = -4x - 4$$

$$\frac{4y}{4} = \frac{-4x}{4} - \frac{4}{4}$$

$$y = -x - 1$$

$$y = mx + b \; ; \; m = -1, \; b = -1$$

$$\boxed{\text{Not a direct proportion.}}$$

Problem 3 of 6

Question

Determine if (4, 5); (7, 10) defines a direct proportion.

Answer

$(4, 5) \quad (7, 10)$

$$\frac{5}{4} \times \frac{10}{7}$$

$5 \times 7 = 10 \times 4$

$35 = 40$ Not right

$\boxed{\text{Not a direct proportion.}}$

Problem 4 of 6

Question

If y varies directly with x, and y=3 when x=2, determine y when x=6.

Answer

$(2, 3) \quad (6, y)$

$$\frac{3}{2} = \frac{y}{6}$$

$$\frac{3 \times 6}{2} = y$$

$$\boxed{9 = y}$$

Problem 5 of 6

Question

If y varies directly with x, and y=7 when x=2, determine y when x=8.

Answer

$(2,7) \quad (8,y)$

$$\frac{7}{2} = \frac{y}{8}$$

$$\frac{7 \times 8}{2} = y$$

$$\boxed{28 = y}$$

Problem 6 of 6

Question

If y varies directly with x, and y=-1 when x=1, determine y when x=5.

Answer

$(1, -1) \quad (5, y)$

$$\frac{-1}{1} = \frac{y}{5}$$

$$\boxed{-5 = y}$$