

★ # 15-18 - optional challenge 😊

Name Key

Period _____

Date _____

Distributive Property and Proportions Worksheet

Solve each proportion. Show proper algebraic work.

$$1. \frac{3}{6} = \frac{x-3}{8}$$

$$\frac{1}{2} = \frac{x-3}{8}$$

$$2(x-3) = 8$$

$$2x - 6 = 8$$

$$2x - 6 + 6 = 8 + 6$$

$$\frac{2x}{2} = \frac{14}{2} \quad \boxed{x=7}$$

$$4. \frac{7}{12} = \frac{a-6}{5}$$

$$12(a-6) = 35$$

$$12a - 72 = 35$$

$$12a - 72 + 72 = 35 + 72$$

$$\frac{12a}{12} = \frac{107}{12}$$

$$\boxed{a = 8\frac{11}{12}}$$

$$7. \frac{3+x}{8} = \frac{7}{12}$$

$$12(3+x) = 56$$

$$36 + 12x = 56$$

$$12x + 36 - 36 = 56 - 36$$

$$\frac{12x}{12} = \frac{20}{12}$$

$$\boxed{x = 1\frac{2}{3}}$$

$$10. \frac{x+7}{7} = \frac{15}{5}$$

$$\frac{x+7}{7} = \frac{3}{1}$$

$$x+7 = 21$$

$$x+7-7 = 21-7$$

$$\boxed{x=14}$$

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

$$3(x-1) = -8$$

$$3x - 3 = -8$$

$$3x - 3 + 3 = -8 + 3$$

$$\frac{3x}{3} = \frac{-5}{3}$$

$$\boxed{x = -1\frac{2}{3}}$$

$$5. \frac{8}{9} = \frac{w-2}{6}$$

$$9(w-2) = 48$$

$$9w - 18 = 48$$

$$9w - 18 + 18 = 48 + 18$$

$$\frac{9w}{9} = \frac{66}{9}$$

$$\boxed{w = 7\frac{1}{3}}$$

$$8. \frac{3}{5} = \frac{y+1}{9}$$

$$5(y+1) = 27$$

$$5y + 5 = 27$$

$$5y + 5 - 5 = 27 - 5$$

$$\frac{5y}{5} = \frac{22}{5}$$

$$\boxed{y = 4\frac{2}{5}}$$

$$11. \frac{3}{5} = \frac{6}{x+3}$$

$$3(x+3) = 30$$

$$3x + 9 = 30$$

$$3x + 9 - 9 = 30 - 9$$

$$\frac{3x}{3} = \frac{21}{3}$$

$$\boxed{x=7}$$

$$3. \frac{x+3}{8} = \frac{7}{8}$$

$$8(x+3) = 28$$

$$8x + 24 = 28$$

$$8x + 24 - 24 = 28 - 24$$

$$\frac{8x}{8} = \frac{4}{8}$$

$$\boxed{x = \frac{1}{2}}$$

$$6. \frac{5}{2-x} = \frac{7}{10}$$

$$7(2-x) = 50$$

$$14 - 7x = 50$$

$$-7x + 14 - 14 = 50 - 14$$

$$\frac{-7x}{-7} = \frac{36}{-7}$$

$$\boxed{x = -5\frac{1}{7}}$$

$$9. \frac{x+3}{3} = \frac{10+4}{4}$$

$$\frac{x+3}{3} = \frac{14}{4}$$

$$2(x+3) = 21$$

$$2x + 6 = 21$$

$$2x + 6 - 6 = 21 - 6$$

$$\frac{2x}{2} = \frac{15}{2} \quad x = 7\frac{1}{2}$$

$$12. \frac{5}{7} = \frac{x-2}{4}$$

$$7(x-2) = 20$$

$$7x - 14 = 20$$

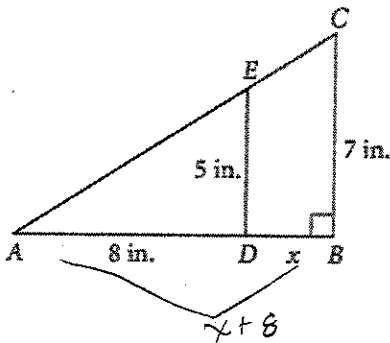
$$7x - 14 + 14 = 20 + 14$$

$$\frac{7x}{7} = \frac{34}{7}$$

$$\boxed{x = 4\frac{6}{7}}$$

The polygons below are similar. Set up a proportion to solve for the variable.

13. $\triangle ABC \sim \triangle ADE$



big
small

$$\frac{x+8}{8} \times \frac{1}{5}$$

$$5(x+8) = 56$$

$$5x + 40 = 56$$

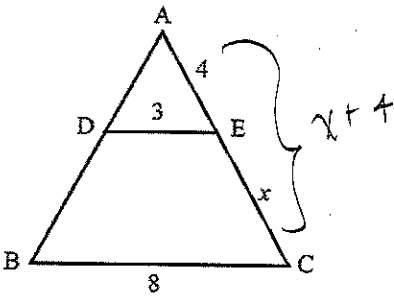
$$5x + 40 - 40 = 56 - 40$$

$$5x = 16$$

$$\frac{5x}{5} = \frac{16}{5}$$

$$\boxed{3\frac{1}{5} \text{ in}}$$

14. $\triangle ABC \sim \triangle ADE$



big
small

$$\frac{x+4}{4} \times \frac{8}{3}$$

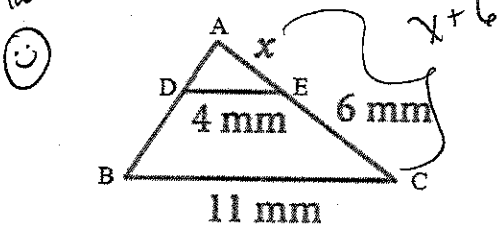
$$3(x+4) = 32$$

$$3x + 12 = 32$$

$$3x + 12 - 12 = 32 - 12$$

$$\frac{3x}{3} = \frac{20}{3} \quad \boxed{x = 6\frac{2}{3}}$$

* 15. $\triangle ABC \sim \triangle ADE$
Challenge



big
small

$$\frac{x+6}{x} \times \frac{11}{4}$$

$$4(x+6) = 11x$$

$$4x + 24 = 11x$$

← group variables on one side!

$$4x - 4x + 24 = 11x - 4x$$

$$\frac{24}{7} = \frac{7x}{7} \quad \boxed{x = 3\frac{3}{7}}$$

Challenge ☺

16. $\frac{x+2}{6} \times \frac{x-1}{12}$

$$6(x-1) = 12(x+2)$$

$$6x - 6 = 12x + 24$$

$$6x - 6x - 6 = 12x - 6x + 24$$

$$-6 = 6x + 24$$

$$-6 - 24 = 6x + 24 - 24$$

$$-\frac{30}{6} = \frac{6x}{6}$$

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

17. $\frac{x+2}{x-2} \times \frac{4}{8}$

$$4(x-2) = 8(x+2)$$

$$4x - 8 = 8x + 16$$

$$4x - 4x - 8 = 8x - 4x + 16$$

$$-8 = 4x + 16$$

$$-8 - 16 = 4x + 16 - 16$$

$$-\frac{24}{4} = \frac{4x}{4}$$

$$\boxed{x = -6}$$

18. $\frac{8}{b+10} \times \frac{4}{2b-7}$

$$4(b+10) = 8(2b-7)$$

$$4b + 40 = 16b - 56$$

$$4b - 4b + 40 = 16b - 4b - 56$$

$$40 = 12b - 56$$

$$40 + 56 = 12b - 56 + 56$$

$$\frac{96}{12} = \frac{12b}{12}$$

$$\boxed{b = 8}$$