



## Number Talk



Find  $12 \times 15$  in as many different ways as possible.  
Show visual representations, if possible.

$12 \times 15 \rightarrow 7$  different methods

$$15 \times 10 = 150$$
$$15 \times 2 = 30$$
$$150 + 30 = 180$$
$$15 \times (10+2) \text{ distributive}$$

$$12 \times 30 = 360$$
$$\frac{360}{2} = 180$$

→ similar

$$12 \times 15 = 6 \times 30$$

similar visual,  
different process

doubling + halving

$$12 \times 10 = 120$$
$$12 \times 5 = 60$$
$$120 + 60 = 180$$
$$12 \times (10+5) = 180$$

distributive

$$12 \times 12 = 144$$
$$12 \times 3 = 36$$
$$144 + 36 = 180$$
$$12 \times (12+3) \text{ distributive}$$

$12 \times 15$

$$12 \times 15 = (3 \times 4) \times 15$$
$$= 3 \times (4 \times 15)$$
$$= 3 \times 60$$
$$= 180$$

associative

$$12 \times 15 = 12 \times (5 \times 3)$$
$$= (12 \times 5) \times 3$$
$$= 60 \times 3$$

associative

## Distributive Property... day 2

What does  $3(5)$  mean?

What does  $3(x)$  mean?

What does  $3(5x)$  mean?

What about  $3(x + y)$ ?

shortcut:  $3(x + y) = 3x + 3y$

This is the distributive property!

# 9 a

$$\begin{aligned} & 3[x + 2(x-4)] \\ &= 3[x + 2x - 8] \\ &= 3[\underline{3x} - 8] \\ &= 9x - 24 \end{aligned}$$

$$\begin{aligned} \text{c) } & 3[2k - 1(2+k)] \\ &= 3[\underline{2k} - \underline{2} - \underline{k}] \\ &= 3(k - 2) \\ &= \frac{\cancel{3}k - 6}{3} \end{aligned}$$

## Distributive Property... day 2

Ex. 1 Simplify

a)  $4(2a + b)$

$$= 8a + 4b$$

b)  $2(4a - 3)$

$$= 8a - 6$$

c)  $-4(2a + b)$

$$= -8a - 4b$$

d)  $-2(4a - 3)$

$$= -8a + 6$$

Ex. 2 Simplify

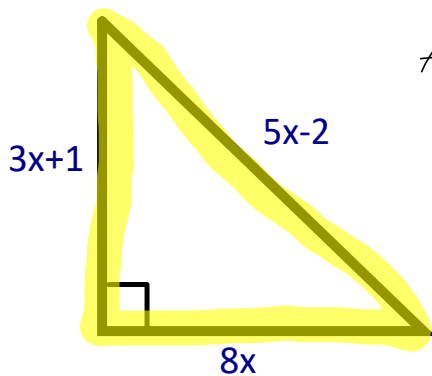
$$\begin{aligned} \text{a) } & 2x(x+1) \\ & = 2x^2 + 2x \end{aligned}$$

$$\begin{aligned} \text{b) } & -3y(4x-2y) \\ & = -12xy + 6y^2 \end{aligned}$$

$$\begin{aligned} \text{c) } & 4a(2a^2 - 3ab^2) + 5b(a + 2ab) \\ & = 8a^3 - 12a^2b^2 + 5ab + 10ab^2 \end{aligned}$$

$$\begin{aligned} \text{d) } & 6xy(2x^2 - y) - 3y(4x^3 - 5xy) \\ & = \underline{12x^3y} - 6xy^2 - \underline{12x^3y} + 15xy^2 \\ & = 9xy^2 \end{aligned}$$

Ex. 3: Find the area and perimeter of the right angle triangle. (Simplify)



$$\begin{aligned}
 A &= \frac{bh}{2} \\
 &= \frac{8x(3x+1)}{2} \\
 &= \frac{24x^2 + 8x}{2}
 \end{aligned}$$

$$\begin{aligned}
 P &= 3x+1 + 5x-2 + 8x \\
 P &= 16x-1 \text{ units}
 \end{aligned}$$

$$\begin{aligned}
 (3x+1)(8x) &= \frac{24x^2}{2} + \frac{8x}{2} \\
 \text{(3x+1)(8x)} & \boxed{A = 12x^2 + 4x \text{ units}^2}
 \end{aligned}$$

Ex. 4: Expand and simplify.

$$\begin{aligned}
 &\frac{2}{3}(3m-2) - \frac{3}{4}(8m-2) \\
 &= \frac{2}{3}(\cancel{3}m) + \frac{2}{3}(\cancel{-2}) - \frac{3}{4}(\cancel{8}m) - \frac{3}{4}(\cancel{-2}) \\
 &= \frac{6m}{3} - \frac{4}{3} - \frac{24m}{4} + \frac{6}{4} \\
 &= \underline{2m} - \frac{4}{3} - \underline{6m} + \frac{3}{2} \\
 &= 2m - 6m - \frac{4}{3} + \frac{3}{2} \\
 &= -4m - \frac{8}{6} + \frac{9}{6} \\
 &= -4m + \frac{1}{6}
 \end{aligned}$$

$$\begin{aligned}
 &\frac{-8}{6} + \frac{9}{6} \\
 &+ \frac{9}{6} - \frac{8}{6}
 \end{aligned}$$

**Homework**

**Page 167**

**#15bdfh, 16ac, 17, 18**

all

$$a(b+c) = ab+ac$$
