

Algebra Ch. 6 Division

Algebra 6-1: Dividing

Warm-Up

Reduce

$$1. \frac{8x}{24x} = \frac{1}{3}$$

(Handwritten: 8 over 24x, 8 over 24x, 1 over 3)

$$2. \frac{30x}{2} = 15x$$

(Handwritten: 30x over 2, 15x)

$$3. \frac{-12n}{-18n} = \frac{2}{3}$$

(Handwritten: -12n over -18n, 2 over 3)

$$\frac{2}{3}$$

(Handwritten: 2 over 3)

Parts of Division

a. dividend : the number being divided

b. divisor : the number that the dividend is being divided by

c. Quotient : the answer

Example: $42 \div 7 = 6$

(Handwritten labels with arrows pointing to the example equation: 42 is labeled 'dividend', 7 is labeled 'divisor', and 6 is labeled 'quotient')

Key Notes $\frac{1}{2} \div \frac{3}{4} = \frac{1}{2} \cdot \frac{4}{3}$

- When dividing fractions multiply by the reciprocal. This means to change the sign to multiply & flip the second fraction.
- A fraction bar is the same thing as division. $\frac{1}{2}$
- A complex fraction is when we have a fraction over a fraction.
- When dividing if the signs are the same (example: positive divided by a positive), the the answer is positive. $\frac{+8}{+9} = \text{positive}$
- When dividing if the signs are opposite like positive and negative, then the answer is negative. $\frac{-8}{+2} = -4$
- Can we have the fraction $4/0$? Why or why not? No, because you can never divide by zero!
- What are 3 other ways to write $-1/3$? $\frac{-1}{3}$ $\frac{1}{-3}$ $\frac{-1 \div 3}{1 \div 3}$ $\frac{1 \div -3}{1 \div 3}$
 $-\frac{1}{3}$

Examples

1. Simplify $\frac{2n}{5} \div \frac{10n}{7}$

$$\frac{2n}{5} \div \frac{10n}{7}$$

$$\frac{2n}{5} \div \frac{10n}{7} = \frac{2n}{5} \cdot \frac{7}{10n} = \frac{14n}{50n} \stackrel{\div 2}{=} \frac{7}{25}$$

2. Simplify $\frac{4xy}{11} \div \frac{11}{22x}$

$$\frac{4xy}{11} \div \frac{11}{22x}$$

$$\frac{4xy}{11} \div \frac{11}{22x} = \frac{4xy}{11} \cdot \frac{1}{22x} = \frac{4xy}{242x} \stackrel{\div 4}{=} \frac{1y}{55}$$

3. Simplify $2\frac{1}{3} \div 1\frac{1}{3}$

$$2\frac{1}{3} \div 1\frac{1}{3}$$

$$\frac{7}{3} \div \frac{4}{3}$$

$$\frac{7}{3} \cdot \frac{3}{4} = \frac{21}{12} \stackrel{\div 3}{=} \frac{7}{4}$$

4. Simplify $\frac{8\pi}{3} \div \frac{-\pi}{24}$

$$\frac{8\pi}{3} \div \frac{-\pi}{24}$$

$$\frac{8\pi}{3} \div \frac{-\pi}{24} = \frac{8\pi}{3} \cdot \frac{24}{-\pi} = \frac{64}{-1} = -64$$

5. Solve and check. $\frac{2.3w}{2.3} = \frac{18.4}{2.3}$

$w = 8$

$2.3(8) = 18.4$

$18.4 = 18.4$

6. $\frac{-31x}{-31} = \frac{527}{-31}$

$x = -17$

check

$-31(-17) = 527$

$527 = 527$

✓

7. What number can x not be? (hint: What number cannot be in the bottom of a fraction?)

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

$x = 3$

Can never equal 0.