

Simplify.

$$\frac{5}{5} \cdot \frac{4}{1} - \frac{3}{5}$$
$$= \frac{20}{5} - \frac{3}{5} = \frac{17}{5} = 3\frac{2}{5}$$

Find this product.

$$\frac{6}{5} \cdot 2\frac{7}{9}$$
$$\frac{6 \div 3}{5 \div 5} \cdot \frac{25 \div 5}{9 \div 3} = \frac{2}{1} \cdot \frac{5}{3} = \frac{10}{3} = 3\frac{1}{3}$$

The quotient of two fractions:

Simplify:

Instead of dividing by a fraction you can MULTIPLY by the RECIPROCAL.

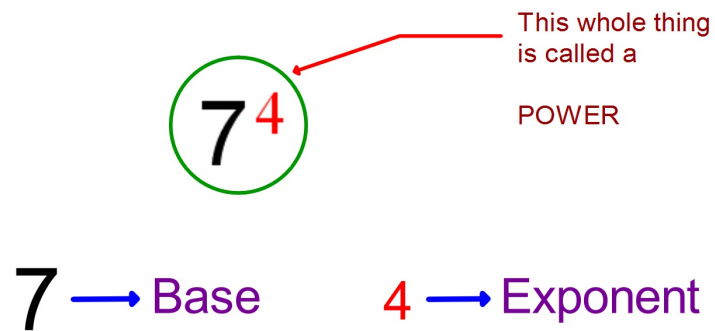
$$\frac{12}{7} \div \frac{16}{35}$$
$$= \frac{12 \div 4}{7 \div 7} \cdot \frac{35 \div 7}{16 \div 4} = \frac{3}{1} \cdot \frac{5}{4} = \frac{15}{4}$$

Find this quotient.

$$\frac{\frac{18}{15}}{\frac{16}{27}} \rightarrow \frac{18}{15} \div \frac{16}{27}$$
$$= \frac{18 \div 3}{15 \div 3} \cdot \frac{27 \div 3}{16 \div 2}$$
$$= \frac{9}{5} \cdot \frac{9}{8} = \frac{81}{40}$$

$$11. \frac{4}{\frac{10}{3}} = 4 \div \frac{10}{3} = \frac{4^{\cancel{2}}}{1} \cdot \frac{3}{10^{\cancel{2}}} = \frac{2}{1} \cdot \frac{3}{5} = \frac{6}{5}$$

Section 1-2: Exponents and Order of Operations



How can you say each?

1. 5^2
 - Five to the second power.
 - The second power of five.
 - Five squared.
2. 4^3
 - Four to the third power.
 - The third power of four.
 - Four cubed.
3. 6^5
 - Six to the fifth power.
 - The fifth power of six.

What does each equal? $x = 3$

1. $2x^2$ 2. $(2x)^2 = (2 \cdot 3)^2 = 6^2 = 36$

$2(3)^2$
 $2 \cdot 9 = 18$

3. $-x^2$
 $= -(3)^2$
 $= -(9) = -9$

4. $(-x)^2 = (-3)^2 = (-3)^2$
 $= (-3)(-3)$
 $= +9$

Simplify each without a calculator.

1. $8 - 4 + 3$
 $= 4 + 3$
 $= 7$

2. $12 \div 4 \cdot 3$
 $= 3 \cdot 3$
 $= 9$

Order of Operations: PEMDAS

Summary

Order of Operations

1. Perform any operation(s) inside grouping symbols.
2. Simplify powers.
3. Multiply and divide in order from left to right.
4. Add and subtract in order from left to right.

Parentheses ()

are just one example of grouping symbols. Can you name two others?

Parentheses: ()

Brackets: []

Braces: { }

Simplify using order of operations
WITHOUT A CALCULATOR

Could be written as
 $4 - 2(13 - (7 + 3))^2$

$$4 - 2[13 - (7 + 3)]^2$$

$$4 - 2(13 - 10)^2$$

$$4 - 2(3)^2$$

$$4 - 2(9)$$

$$4 - 18 =$$

-14

Simplify. $\frac{8 - 3}{4} = \frac{5}{4}$

Why can't you divide
just the 8 by 4?

because this fraction really means: $(8 - 3) \div 4$

And by Order of Operations you must subtract before you divide.

If you wanted to divide first you would have to divide both the 8 and the 3 by 4, then you could subtract.

Simplify each

$$2 - (5 + 1) \div (9 - 2)$$

$$= 2 - 6 \div 7$$

$$= 2 - \frac{6}{7}$$

$$= 1\frac{1}{7} \text{ or } \frac{8}{7}$$