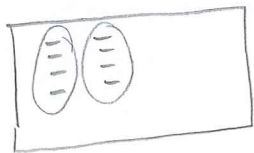


Lesson 3.2.5 Homework Problems 3-82 to 3-86

2. Simplify each expression without using a calculator. For each expression, draw a diagram or use words to explain how you know your answer makes sense.

a) $-8 \div -4 = 2$

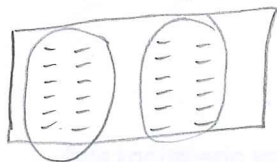


(-8) divided into 2 groups of (-4)

b) $18 \div -3 = (-6)$

can't model

c) $-24 \div 2 = (-12)$



(-24) divided into 2 groups of (-12)

d) $17 \div -1 = (-17)$

can't model

3-83. Follow the order of operations (use circling the terms if it is helpful) to simplify the following expressions:

a) $-7 + 4 \div (-2)$
 $-7 + (-2)$
 (-9)

b) $17.5 \div (-7) + -8.1(2)$
 $(-2.5) + (-16.2)$
 (-18.7)

c) $(8 + -3)(-5 \frac{3}{5})$
 $(5)(-5.6)$
 (-28)

d) $(4 - (-3)) + (5 \div (-5))$
 $(4 + 3) + (-1)$
 $7 + (-1)$
 (6)



METHODS AND MEANINGS

MATH NOTES

Multiplicative Inverses and Reciprocals

Numbers with a product of 1 are called multiplicative inverses.

$\frac{5}{8} \cdot \frac{8}{5} = \frac{40}{40} = 1$ $3\frac{1}{4} = \frac{13}{4}$, so $3\frac{1}{4} \cdot \frac{4}{13} = \frac{13}{4} \cdot \frac{4}{13} = \frac{52}{52} = 1$ $\frac{1}{7} \cdot 7 = 1$

In general $a \cdot \frac{1}{a} = 1$ and $\frac{a}{b} \cdot \frac{b}{a} = 1$, where neither a nor b equals zero. You can say that $\frac{1}{a}$ is the reciprocal of a and $\frac{b}{a}$ is the reciprocal of $\frac{a}{b}$. Note that 0 has no reciprocal.

3-84. Read the Math Notes box. Use the information to find the multiplicative inverse, or reciprocal, of each number below.

a) $\frac{7}{13}$

$\frac{13}{7}$

b) $\frac{1}{5}$

$\frac{5}{1}$

c) 2

$\frac{1}{2}$

d) $2\frac{5}{8} = \frac{21}{8}$

$\frac{8}{21}$

e) Check your answers by multiplying the given number with your answer and verifying that the product of the numbers is 1.

3-85. Write at least three expressions that use each of the numbers 2, 3, 6, and 8 only once and any operations and grouping symbols (addition, subtraction, multiplication, division, and parentheses). Each expression should have a different value, with one being equal to 28.

Expression 1:

$3 \cdot 8 + 6 - 2$
 $\rightarrow 24 + 6 - 2$
 $24 + 4$
 28

Expression 2:

$6 \cdot 8 \div 3 + 2$
 $48 \div 3 + 2$
 $16 + 2$
 18

Expression 3:

$\downarrow 3 \cdot 6 + 2 \cdot 8$
 $18 + 16$
 34

3-86. Copy and complete each problem mentally.

a) $\frac{5}{7} \cdot \frac{7}{5} = \boxed{1}$

b) $\frac{8}{13} \cdot \frac{13}{8} = 1$

c) $\frac{27}{31} \cdot \frac{31}{27} = 1$

d) $\frac{5}{2} \cdot \frac{2}{5} = 1$



e) What do all of the problems have in common?

They all equal 1.