Dear 6th Grade Parents and Students,

We all know that over the summer, mathematical skills are often weakened which may result in a setback at the beginning of the school year. To avoid the need to play "catch-up" in the fall, an assignment has been prepared to help the students maintain their skills. This assignment is made up of concepts that have been taught in sixth grade and will provide students a thorough review of skills needed for seventh grade. It is important that this packet be completed to the best of their ability. The objective of this assignment is to help them succeed in the next school year.

All questions must have work to support the answers. Work can be done on the question paper, if work space is available. If not, work should be completed on loose leaf and attached to question paper. Do not squeeze work into a tiny area. Any assignment without work will be considered an incomplete assignment. This packet along with any loose leaf used to show work should be stapled together and submitted on the first day of school. Thank you for your cooperation. Have a great summer!

Sincerely,

Ms. Merkel

Divide Decimals Hints/Guide:

Move the decimal point in the divisor (number outside the division box) until it is a whole number.
Move the decimal point in the dividend (number inside the division box) the same number of spaces.
Put the decimal point on the top of the division box.
Divide the numbers.

Example: 1.692 ÷ 23.5   (Remember the first number goes inside the division box.)

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        0 .072
23 5.1 6.920     move the decimal in the divisor to the box (1 space)
                 move the decimal inside the box the same number of spaces (1 space)
     -1 6 45
        4 7 0
      -  4 7 0
            0
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Exercises: Divide the decimals. Show all work. Do not use a calculator.

1.   14.04 ÷ 0.52

2.   6.93 ÷ 0.21

3.   27.95 ÷ 0.43

4.   0.2944 ÷ 0.032

5.   0.4615 ÷ 7.1

6.   7.626 ÷ 9.3

7.   167.4 ÷ 0.062

8.   7.31 ÷ 0.017

Integer Addition, Subtraction, Multiplication and Division

Find each sum.

1) $(-3)+(-5)$

2) $(-6)+(-1)$

3) $1+(-1)$

4) $(-5)+(-3)$

Find each difference.

5) $(-6)-3$

6) $7-(-1)$

7) $(-3)-8$

8) $3-8$

Evaluate each expression.

9) $7-(-5)$

10) $(-2)-(-2)$

11) $(-4)-(-5)$

12) $(-7)-7$

13) $(-1)-(-1)$

14) $3-(-5)$

15) $6+(-1)$

16) $(-8)+4$

17) $(-5)-(-1)$

18) $(-8)-(-6)$

Find each product.

19) $(-5)(10)$

20) $(-3)(7)$

21) $(7)(-7)$

22) $(5)(-9)$

23) $(7)(-1)$

24) $(-9)(5)$

25) $(-6)(-6)$

26) $(-3)(-10)$

27) $(8)(-2)$

28) $(4)(-4)$

29) $(-10)(-3)$

30) $(7)(-8)$

31) $(-8)(-2)$

32) $(-4)(-6)$

33) $(-9)(3)$

34) $(2)(-2)$

35) $(6)(-3)(-5)$

36) $(9)(-7)(9)$

37) $(-9)(2)(-6)$

38) $(-6)(-1)(8)$

39) $(-2)(-5)(-7)(8)$

40) $(5)(8)(-2)(-9)$

41) $(4)(-7)(8)(-5)$

42) $(7)(-2)(7)(5)$

Find each quotient.

43) $\dfrac{-70}{-10}$

44) $\dfrac{-21}{-7}$

45) $\dfrac{36}{-4}$

46) $\dfrac{4}{-1}$

47) $\dfrac{18}{3}$

48) $\dfrac{12}{6}$

49) $-72 \div -9$

50) $-18 \div 9$

51) $8 \div -2$

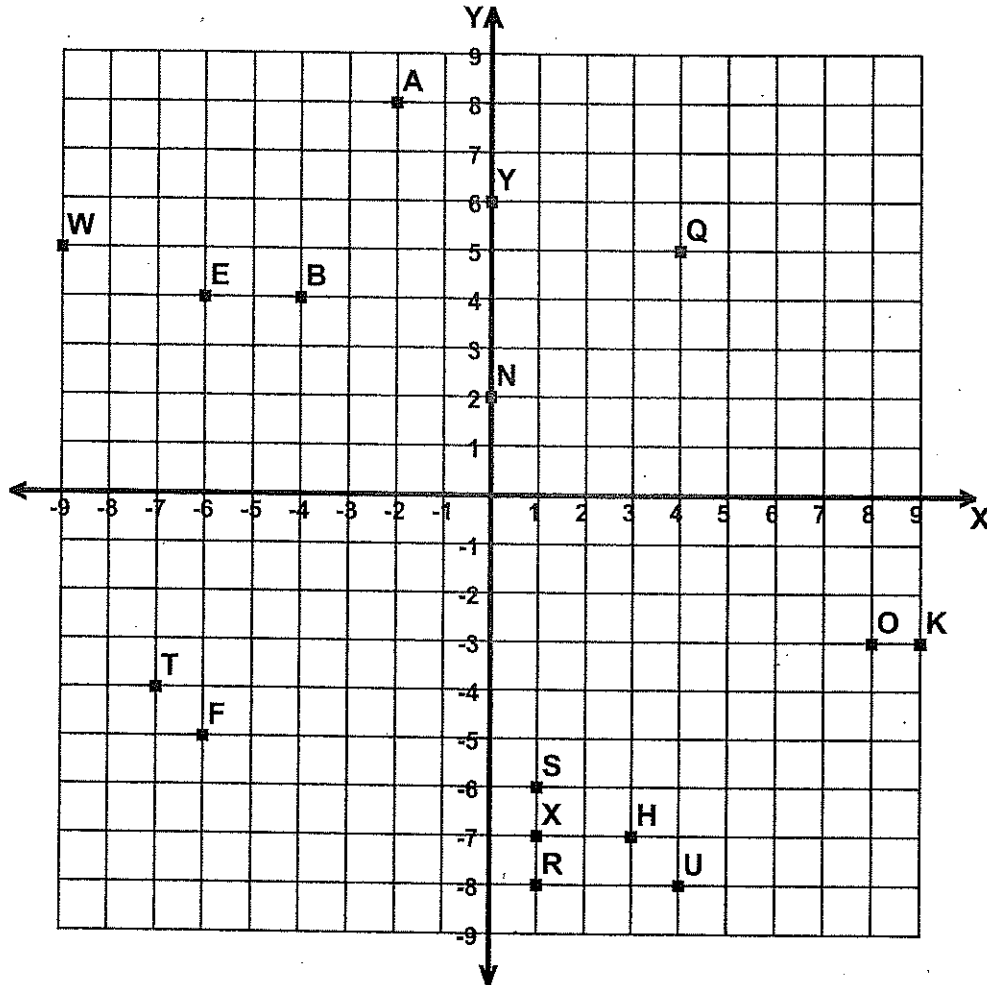52) $-20 \div -5$

53) $-14 \div 7$

54) $-72 \div 8$

Four Quadrant Ordered Pairs

Tell what point is located at each ordered pair.

1) (+9,-3) _____   3) (+0,+2) _____   5) (+0,+6) _____   7) (+1,-7) _____

2) (+4,-8) _____   4) (+1,-8) _____   6) (-7,-4) _____   8) (-6,+4) _____

Write the ordered pair for each given point.

9) Q _____   11) H _____   13) A _____   15) S _____

10) O _____   12) F _____   14) B _____   16) W _____

Plot the following points on the coordinate grid.

17) J (+5,+8)   19) C (-9,+4)   21) G (+9,-6)   23) P (+8,-9)

18) M (-3,-9)   20) V (-8,-5)   22) Z (+5,-6)   24) I (-9,-4)

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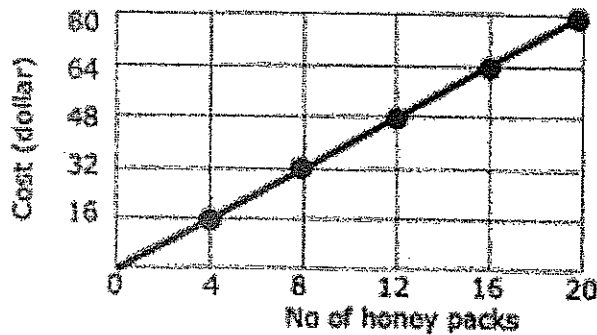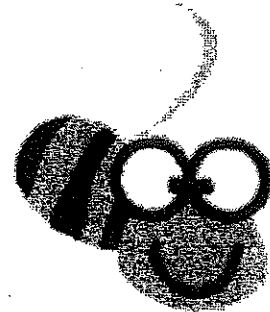
Graphs of Proportional Relationship - Guided Lesson

Complete the following problems:

1) The graph below represents the cost of packs of honey as a unit rate of $4 dollars for every pack of honey. The unit rate is represented as $4/pack. Represent the relationship using a table and an equation.

2) Andrew brought packs of biscuit. Create a graph to determine if the number of packs and price are proportional for each serving size listed in the table. If the quantities are proportional, what is the constant of proportionality or unit rate that defines the relationship? Explain how the constant of proportionality was determined and how it relates to both the table and graph.

Data	1	2	3	4
Packed of Biscuit	1	2	3	4
Price	8	16	24	32
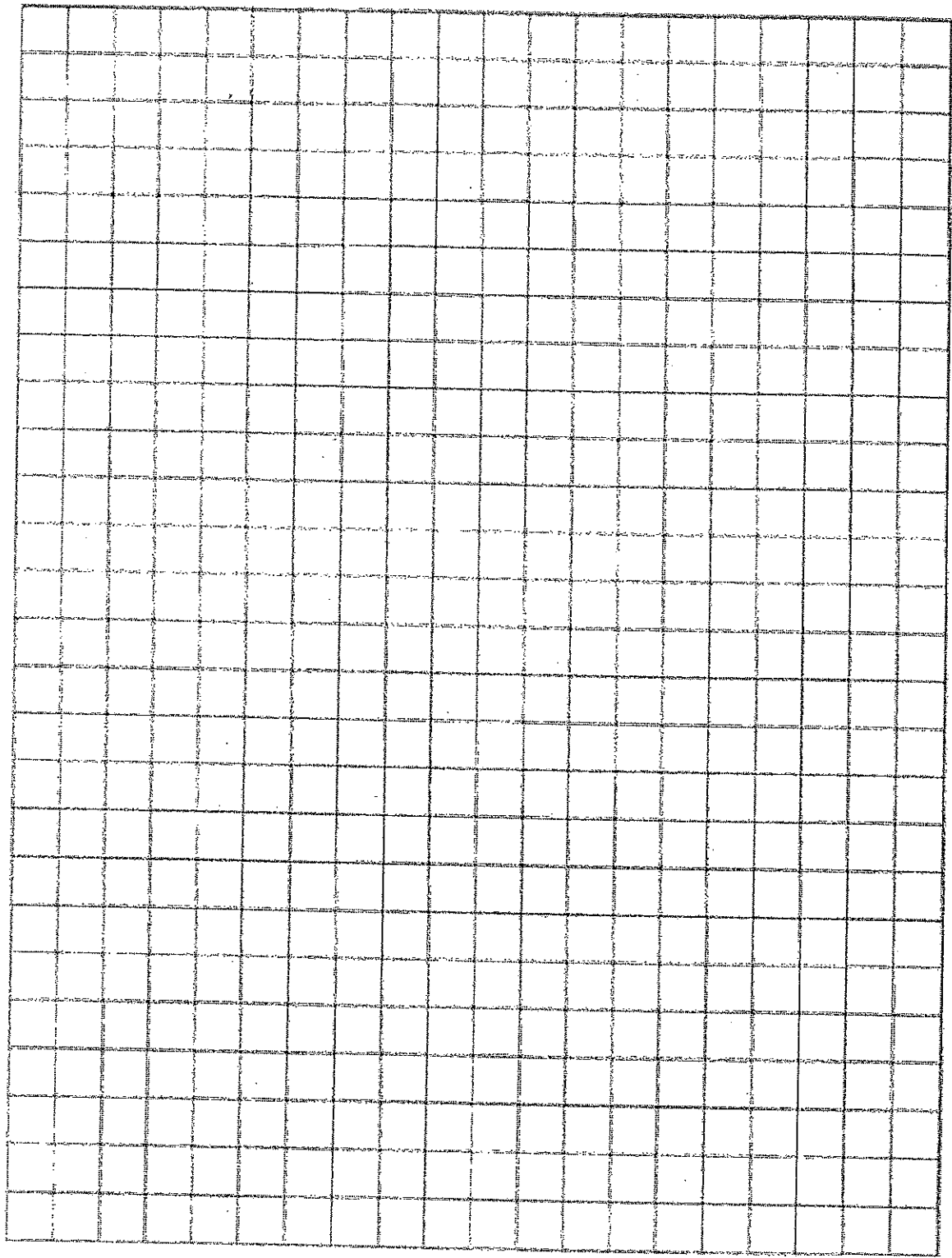
Addition and Subtraction of Fractions
with Different Denominators

Remember: In order to add or subtract fractions, the denominators MUST be the same.

Example:

$$\frac{2}{3}+\frac{3}{8}=?$$

LCM = 24

$$\frac{2}{3}\times\frac{8}{8}=\frac{16}{24}$$

$$+\ \frac{3}{8}\times\frac{3}{3}=\frac{9}{24}$$

$$\frac{25}{24}$$

$$\frac{25}{24}=1\frac{1}{24}$$

Find the LCM
Write the problem vertically.

Find the equivalent fractions with the LCM as a denominator.

Add the fractions with the same denominator.

Remember to write as a mixed number and reduce when possible!

Add or Subtract:

1) $\frac{7}{8}+\frac{3}{4}$

2) $\frac{7}{8}-\frac{3}{4}$

3) $\frac{11}{12}+\frac{17}{18}$

4) $\frac{3}{7}+\frac{2}{5}$

5) $\frac{15}{24}-\frac{10}{27}$

6) $\frac{7}{12}+\frac{5}{16}$

7) $\frac{16}{27}-\frac{5}{24}$

8) $1\frac{1}{4}+\frac{3}{8}$

9) $\frac{11}{4}+\frac{23}{18}$

10) $\frac{29}{8}+\frac{9}{7}$

11) $2\frac{13}{35}-1\frac{5}{14}$

12) $\frac{2}{3}+\frac{1}{21}-\frac{2}{7}$

Subtraction of Fractions with Borrowing

Example 1:

$$7 - 1\frac{1}{3} = ?$$

Example 2:

$$5\frac{1}{3} - 2\frac{5}{6} = ?$$

Note: There are two common methods; DO NOT mix the steps of the methods!

Method 1 *Example 1*	**Subtraction with Borrowing**
$$\begin{aligned}7 &= 6\frac{3}{3}\\[6pt]-\ 1\frac{1}{3} &= 1\frac{1}{3}\\[4pt]\hline &\ \ 5\frac{2}{3}\end{aligned}$$	Write problem vertically Cannot subtract fraction from whole without finding common denominator. Borrow one whole from 7 and express as $\dfrac{LCD}{LCD}$. $\left(1 = \dfrac{3}{3}\right)$ Subtract numerators and whole numbers.
Example 2 $$\begin{aligned}5\frac{1}{3} &= 5\frac{2}{6} = 4\frac{8}{6}\\[6pt]-\ 2\frac{5}{6} &= 2\frac{5}{6} = 2\frac{5}{6}\\[4pt]\hline & \qquad\quad 2\frac{3}{6} = 2\frac{1}{2}\end{aligned}$$	Write problem vertically and find LCD Cannot subtract 5 from 2. Borrow one whole from 5, $\left(4\frac{6}{6}\right)$ and add $\left(5\frac{2}{6} = 4\frac{6+2}{6}\right)$. Subtract numerators and whole numbers; reduce as needed.
Method 2 *Example 1:* $$\begin{aligned}7 &= \frac{21}{3}\\[6pt]-\ 1\frac{1}{3} &= \frac{4}{3}\\[4pt]\hline &\ \ \frac{17}{3} = 5\frac{2}{3}\end{aligned}$$	**Subtraction Using Improper Fractions** Write the problem vertically. Convert the whole numbers and mixed numbers to improper fractions using the LCD. Subtract $\left(\dfrac{21-4}{3}\right)$ and convert improper fraction to mixed number.
Example 2: $$\begin{aligned}5\frac{1}{3} &= 5\frac{2}{6} = \frac{32}{6}\\[6pt]-\ 2\frac{5}{6} &= 2\frac{5}{6} = \frac{17}{6}\\[4pt]\hline & \qquad\quad \frac{15}{6} = 2\frac{3}{2}\\[6pt] & \qquad\quad 2\frac{3}{2} = 2\frac{1}{2}\end{aligned}$$	Write problem vertically and find the LCD. Change the mixed numbers to improper fractions. Subtract the numerators. Convert to a mixed number. Reduce.

Subtract:

1) $5 - 2\frac{1}{3}$

2) $7 - 1\frac{1}{6}$

3) $10 - 4\frac{5}{6}$

4) $3\frac{5}{8} - 2\frac{7}{8}$

5) $1\frac{1}{8} - \frac{3}{4}$

6) $3\frac{5}{12} - 1\frac{15}{16}$

7) $8 - 6\frac{4}{5}$

8) $4\frac{3}{8} - 3\frac{5}{6}$

9) $17 - 4\frac{5}{9}$

10) $5\frac{5}{18} - 1\frac{3}{4}$

11) $5\frac{2}{7} - 3\frac{3}{8}$

12) $18 - 1\frac{7}{16} - \frac{7}{12}$

Multiplication of Fractions

Example:

$$\frac{3}{10} \times 3\frac{5}{6}$$

Note: LCD is not needed to multiply fractions.

$$3\frac{5}{6} = \frac{(6 \times 3) + 5}{6}$$

Change mixed numbers to improper fractions

$$\frac{3}{10} \times \frac{23}{6} = \frac{1 \times 23}{10 \times 2}$$

Before multiplying, reduce by dividing any numerator with any denominator with a common factor. (3 and 6 have a common factor of 3)

$$\frac{1 \times 23}{10 \times 2} = \frac{23}{20}$$

Multiply numerators and denominators

$$\frac{23}{20} = 1\frac{3}{20}$$

Convert improper fractions to mixed numbers.

Multiply:

1) $\quad 4\frac{1}{2} \times \frac{2}{3}$

2) $\quad 3\frac{1}{5} \times 1\frac{1}{4}$

3) $\quad 6 \times 1\frac{1}{9}$

4) $\quad 2\frac{1}{6} \times 1\frac{1}{2}$

5) $\quad \frac{10}{11} \times 1\frac{7}{15}$

6) $\quad 4\frac{3}{5} \times 15$

7) $\quad 3\frac{3}{8} \times 2\frac{2}{9}$

8) $\quad 34 \times 2\frac{3}{17}$

9) $\quad 9\frac{7}{8} \times \frac{4}{5}$

10) $\quad 7\frac{9}{10} \times 1\frac{1}{4}$

11) $\quad 18 \times 1\frac{3}{7} \times \frac{4}{15}$

12) $\quad 3\frac{1}{5} \times 1\frac{5}{6} \times \frac{3}{8}$

Division of Fractions

Example:

$$2\frac{3}{4} \div 2\frac{3}{8} \qquad \textbf{OR} \qquad \frac{2\frac{3}{4}}{2\frac{3}{8}}$$

Note: One fraction divided by another may be expressed in either way shown above. Also, LCD is not needed to divide fractions.

$2\frac{3}{4} = \frac{11}{4}$ and $2\frac{3}{8} = \frac{19}{8}$ Convert mixed numbers to improper fractions

$\dfrac{11}{4} \div \dfrac{19}{8} = \dfrac{11}{4} \times \dfrac{8}{19}$ Invert the divisor $\left(\dfrac{19}{8}\right)$. (Turn the fraction after the division sign upside down)

$\dfrac{11 \times 8}{4 \times 19} = \dfrac{11 \times 2}{1 \times 19}$ Reduce if possible. (4 and 8 have a common factor)

$\dfrac{11 \times 2}{1 \times 19} = \dfrac{22}{19}$ Multiply numerators and denominators

$\dfrac{22}{19} = 1\dfrac{3}{19}$ Convert to a mixed number and reduce if needed.

Divide these fractions.   Reduce to lowest terms!

1) $\dfrac{5}{6} \div \dfrac{1}{2}$

2) $\dfrac{3}{4} \div \dfrac{3}{7} =$

3) $3 \div 1\dfrac{2}{5} =$

4) $\dfrac{\frac{1}{2}}{\frac{1}{3}} =$

5) $\dfrac{1}{2} \div 6 =$

6) $2\dfrac{1}{4} \div 3 =$

7) $3\dfrac{1}{7} \div 2\dfrac{5}{14} =$

8) $\dfrac{2\frac{5}{8}}{1\frac{7}{8}}$

9) $4\dfrac{1}{2} \div 1\dfrac{3}{4} =$

Some Fraction Word Problems

Example 1:

One day Ashley biked $\frac{3}{4}$ of a mile before lunch and $\frac{7}{8}$ of a mile after lunch. How far did she cycle that day?

> *Note: this problem is asking you to add the distances traveled.*

$$\frac{3}{4}+\frac{7}{8}$$

To add fractions, find a LCD (8).

Add the numerators; keep the denominators.

$$\frac{6}{8}+\frac{7}{8}$$

Convert improper fraction to a mixed number; reduce if needed.

$$\frac{13}{8}=1\frac{5}{8}$$

Ashley cycled $1\frac{5}{8}$ miles that day.

Example 2:

A tailor needs $3\frac{1}{4}$ yards of fabric to make a jacket. How many jackets can he make with $19\frac{1}{2}$ yards of fabric?

> *Note: this problem is asking you to divide.*

$$19\frac{1}{2}\div 3\frac{1}{4}$$

To divide fractions, convert mixed numbers to improper fractions.

$$\frac{39}{2}\div\frac{13}{4}$$

Invert the divisor and reduce if possible, (39 and 13 have a common factor, as do 2 and 4).

$$\frac{39}{2}\times\frac{4}{13}=\frac{3\times 2}{1\times 1}$$

Multiply numerators and denominators.

$$\frac{3}{1}=3$$

The tailor can make 3 jackets from $19\frac{1}{2}$ yards of fabric.

Solve the following problems.

1. An empty box weighs $2\frac{1}{4}$ pounds. It is then filled with $16\frac{2}{3}$ pounds of fruit. What is the weight of the box when it is full?

2. Yanni is making formula for the baby. Each bottle contains $6\frac{2}{5}$ scoops of formula. The formula container holds 320 scoops of formula. How many bottles of formula can Yanni make?

3. Miguel bought $2\frac{1}{4}$ pounds of hamburger, $1\frac{1}{5}$ pounds of sliced turkey, and 2 pounds of cheese. What was the total weight of all of his purchases?

4. Sheila had 8 yards of fabric. She used $2\frac{1}{4}$ yards to make a dress. How much fabric does she have left?

5. A father leaves his money to his four children. The first received $\frac{1}{3}$, the second received $\frac{1}{6}$, and the third received $\frac{2}{5}$. How much did the remaining child receive? (Hint: You can think of father's money as one whole.)

6. Find the total perimeter (sum of the sides) of an equilateral triangle, (triangle with equal sides), if each side measures $2\frac{1}{4}$ inches.

Name_____

Two-Step Equations

Date_____ Period_____

Solve each equation.

1) $6 = \dfrac{a}{4} + 2$

2) $-6 + \dfrac{x}{4} = -5$

3) $9x - 7 = -7$

4) $0 = 4 + \dfrac{n}{5}$

5) $-4 = \dfrac{r}{20} - 5$

6) $-1 = \dfrac{5 + x}{6}$

7) $\dfrac{v + 9}{3} = 8$

8) $2(n + 5) = -2$

9) $-9x + 1 = -80$

10) $-6 = \dfrac{n}{2} - 10$

11) $-2 = 2 + \dfrac{v}{4}$

12) $144 = -12(x + 5)$

13) $-15 = -4m + 5$

14) $10 - 6v = -104$

15) $8n + 7 = 31$

16) $-9x - 13 = -103$

17) $\dfrac{n+5}{-16} = -1$

18) $-10 = -10 + 7m$

19) $-10 = 10(k - 9)$

20) $\dfrac{m}{9} - 1 = -2$

21) $9 + 9n = 9$

22) $7(9 + k) = 84$

23) $8 + \dfrac{b}{-4} = 5$

24) $-243 = -9(10 + x)$