SUMMER MATH PACKET
FOR STUDENTS ENTERING GENERAL MATH CLASSES

Dear Parents of Incoming Sixth Grade Students,

Next year your child will be entering middle school. This marks an exciting time for your child as he/she begins the transition from elementary school to high school! The following math packet has been compiled to help make this transition as easy as possible. Many pages include examples and explanations on the top or front with problems for the students to complete on the bottom or back of the page. Extra problems on each page have been removed resulting in the misnumbering of problems. Problems should be done in pencil and work must be shown for each problem. Work done on a separate piece of paper should be stapled to the packet.

Please have your child do a few problems each day beginning in July. Students will better maintain their skills if the work is spread out over the summer. Please have your child work independently. They should refer to the examples at the top of the page if they have difficulty. Calculators are not allowed. ***It is a requirement that this package be completed and brought with your child on the first day of school.***

Each student entering the sixth grade is expected to have mastery of the basic math facts for addition, subtraction, multiplication and division. If your child is weak in any of these areas I would recommend the use of flash cards and computer math games throughout the summer. Next year we will be applying these facts daily.

I look forward to meeting you and your children in September.

Thank you,

Mrs. Berlin

SKILL 7

Name _____ Date _____ Period _____

Divisibility Rules

The following rules will help you determine if a number is divisible by 2, 3, 4, 5, 6, 8, 9, or 10.

A number is divisible by:

- 2 if the ones digit is divisible by 2.
- 3 if the sum of the digits is divisible by 3.
- 4 if the number formed by the last two digits is divisible by 4.
- 5 if the ones digit is 0 or 5.
- 6 if the number is divisible by 2 and 3.
- 8 if the number formed by the last three digits is divisible by 8.
- 9 if the sum of the digits is divisible by 9.
- 10 if the ones digit is 0.

Example **Determine whether 2120 is divisible by 2, 3, 4, 5, 6, 9, or 10.**

2: The ones digit is divisible by 2.
2120 is divisible by 2.

3: The sum of the digits $2 + 1 + 2 + 0 = 5$, is not divisible by 3.
2120 is not divisible by 3.

4: The number formed by the last two digits, 20, is divisible by 4.
2120 is divisible by 4.

5: The ones digit is 0.
2120 is divisible by 5.

6: The number is divisible by 2 but not by 3.
2120 is not divisible by 6.

8: The number formed by the last 3 digits, 120, is divisible by 8.
2120 is divisible by 8.

9: The sum of the digits, $2 + 1 + 2 + 0 = 5$, is not divisible by 9.
2120 is not divisible by 9.

10: The ones digit is 0.
2120 is divisible by 10.

2120 is divisible by 2, 4, 5, 8, and 10.

***Determine whether the first number is divisible by the second number. Write* yes *or* no.**

1. 4829; 9
2. 482; 2
3. 1692; 6
4. 1355; 10
5. 633; 3
6. 724; 4

SKILL 9

Name _____ Date _____ Period _____

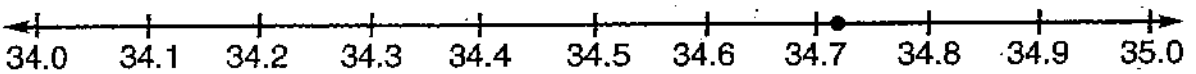
Rounding Decimals

Round 34.725 to the nearest tenth.

You can use a number line.

Find the approximate location of 34.725 on the number line.

34.725 is closer to 34.7 than to 34.8
34.725 rounded to the nearest tenth is 34.7.



You can also round without a number line.

Find the place to which you want to round.	Look at the digit to the right. If the digit is less than 5, round down. If the digit is 5 or greater, round up.	2 is less than 5. Round down.
34.725	34.725	34.7

Round each number to the underlined place-value position.

4. 6.3̲2

5. 0.47̲21

6. 26.4̲44

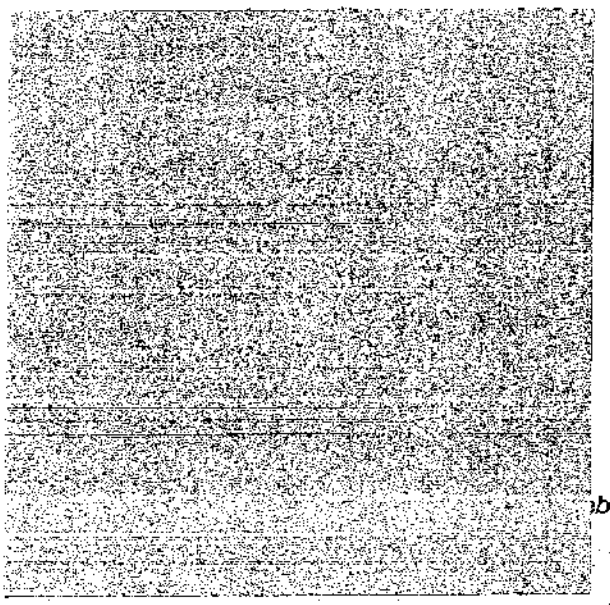
7. 1.1̲61

8. 362.084̲6

9. 15.55̲3

12. 631.000̲8

13. 17.32̲7



SKILL 11

Name _____ Date _____ Period _____

Adding Decimals

To add decimals, first line up the decimal points. Then add as with whole numbers.

Examples **1** **Add: 36.801 + 8.945.**

$$\begin{array}{r} {\scriptstyle 1\,1} \\ 36.801 \\ +\ 8.945 \\ \hline 45.746 \end{array}$$

2 **Add: 7.3 + 9 + 8.45.**

$$\begin{array}{r} 7.30 \\ 9.00 \\ +\ 8.45 \\ \hline 24.75 \end{array}$$

Write 9 as 9.00.

3 **Add: \$415 + \$29.05.**

$$\begin{array}{r} {\scriptstyle 1} \\ \$415.00 \\ +\ 29.05 \\ \hline \$444.05 \end{array}$$

Annex zeros to \$415 to help align the decimal points.

Add.

1. $\begin{array}{r} \$27.06 \\ +\ 7.06 \\ \hline \end{array}$

3. $\begin{array}{r} 68.7 \\ +\ 8.41 \\ \hline \end{array}$

5. $\begin{array}{r} 93.7 \\ +\ 24.85 \\ \hline \end{array}$

7. $\begin{array}{r} 15.987 \\ +\ 9.07 \\ \hline \end{array}$

9. $\begin{array}{r} 14.16 \\ +\ 8.9 \\ \hline \end{array}$

11. $\begin{array}{r} 246.38 \\ +\ 19.976 \\ \hline \end{array}$

SKILL 12

Name _____ Date _____ Period _____

Subtracting Decimals

To subtract decimals, line up the decimal points.
Then subtract as with whole numbers.

Examples **1** **Subtract: 8.1 − 4.75.**

$$\begin{array}{r} {}^{0}8.{}^{1}\cancel{1}{}^{10}\cancel{0} \\ -\ 4.75 \\ \hline 3.35 \end{array}$$

Annex a zero to 8.1 to help align the decimal points.

2 **Subtract: \$84 − \$1.79.**

$$\begin{array}{r} \$8{}^{3}\cancel{4}.{}^{9}\cancel{0}{}^{10}\cancel{0} \\ -\ 1.79 \\ \hline \$82.21 \end{array}$$

Annex two zeros to \$84 to help align the decimal points.

3 **Subtract: 16.703 − 8.**

$$\begin{array}{r} 16.703 \\ -\ 8.000 \\ \hline 8.703 \end{array}$$

Annex three zeros to 8 to help align the decimal points.

Subtract.

1. $\begin{array}{r} 9.14 \\ -\ 2.075 \\ \hline \end{array}$

3. $\begin{array}{r} 20.14 \\ -\ 8.093 \\ \hline \end{array}$

5. $\begin{array}{r} 14.395 \\ -\ 2.654 \\ \hline \end{array}$

7. $\begin{array}{r} 0.261 \\ -\ 0.09 \\ \hline \end{array}$

9. $\begin{array}{r} 6.324 \\ -\ 0.75 \\ \hline \end{array}$

11. $\begin{array}{r} 16.37 \\ -\ 5.609 \\ \hline \end{array}$

SKILL 14

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Multiplying Decimals by Decimals

Multiply decimals just like you multiply whole numbers. The number of decimal places in the product is equal to the sum of the number of decimal places in the factors.

Example **Multiply 0.038 and 0.17.**

$$\begin{array}{rl} 0.038 & \longleftarrow \textit{three decimal places} \\ \times\ 0.17 & \longleftarrow \textit{two decimal places} \\ \hline 266 & \\ 38 & \\ \hline 0.00646 & \longleftarrow \textit{five decimal places} \end{array}$$

The product is 0.00646.

Place the decimal point in each product.

1. $1.47 \times 6 = 882$
2. $0.9 \times 2.7 = 243$
3. $6.48 \times 2.4 = 15552$

Multiply.

4. $\begin{array}{r} 0.8 \\ \times\ 7 \\ \hline \end{array}$
5. $\begin{array}{r} 0.04 \\ \times\ 0.3 \\ \hline \end{array}$
6. $\begin{array}{r} 0.16 \\ \times\ 26 \\ \hline \end{array}$

8. 12.2×0.06
9. 0.0015×0.15

SKILL 16

Name _____ Date _____ Period _____

Dividing Decimals by Decimals

To divide by a decimal, change the divisor to a whole number.

Example **Find 0.5194 ÷ 0.49.**

$$
\begin{array}{r}
1.06 \\
0.49\overline{)0.51.94} \\
\underline{49} \\
2\,94 \\
\underline{2\,94} \\
0
\end{array}
$$

Change 0.49 to 49.
Move the decimal point two places to the right.
Move the decimal point in the dividend the same number of places to the right.
Divide as with whole numbers.

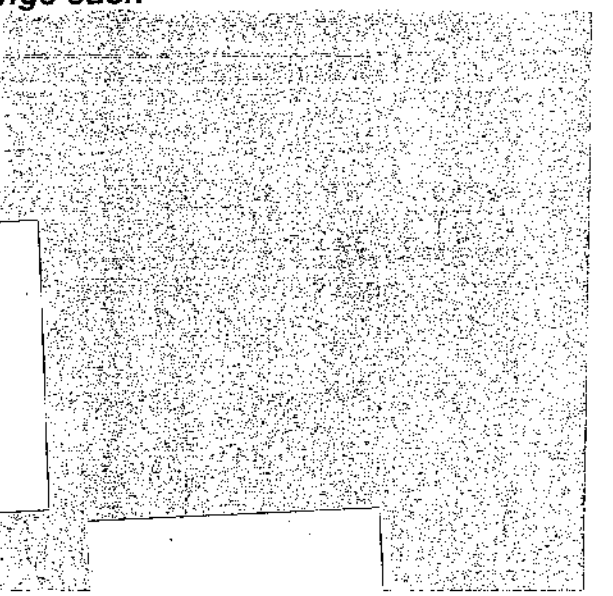
Without finding or changing each quotient, change each problem so that the divisor is a whole number.

1. 3.4 ÷ 1.1

2. 76.44 ÷ 0.006

4. 89.45 ÷ 0.908

5. 5.675 ÷ 6.8



Divide.

13. $0.9\overline{)6.3}$

14. $0.6\overline{)0.540}$

16. $2.4\overline{)0.192}$

17. $0.44\overline{)5.28}$

SKILL 29

Name _____ Date _____ Period _____

Adding Fractions and Mixed Numbers

To add fractions and mixed numbers, first rename each fraction as necessary. Then add the fractions. Next, add the whole numbers. Rename and simplify if necessary.

Example 1 **Add:** $4\frac{5}{6} + 5\frac{1}{4}$.

Step 1	Step 2	Step 3
Rename each fraction by finding the LCD if necessary. $4\frac{5}{6} \longrightarrow 4\frac{10}{12}$ $+ 5\frac{1}{4} \longrightarrow + 5\frac{3}{12}$	Add the fractions. Then add the whole numbers. $4\frac{10}{12}$ $+ 5\frac{3}{12}$ $9\frac{13}{12}$	Rename and simplify if necessary. $9\frac{13}{12} = 10\frac{1}{12}$

Example 2 **Add:** $14\frac{5}{9} + 7$.

$$\begin{array}{r} 14\frac{5}{9} \\ +\ 7 \\ \hline 21\frac{5}{9} \end{array}$$

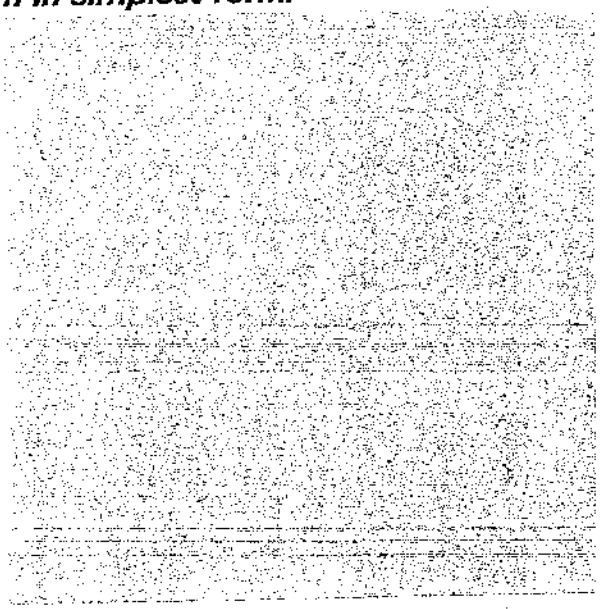
Add. Write each sum in simplest form.

1. $\begin{array}{r} 13 \\ +\ 9\frac{7}{8} \\ \hline \end{array}$

4. $\begin{array}{r} 11\frac{3}{4} \\ +\ 8\frac{2}{3} \\ \hline \end{array}$

5. $\begin{array}{r} 16\frac{1}{2} \\ +\ 14\frac{5}{7} \\ \hline \end{array}$

8. $\begin{array}{r} 12\frac{1}{10} \\ +\ 7\frac{5}{6} \\ \hline \end{array}$



SKILL 31

Name _____ Date _____ Period _____

Subtracting Fractions and Mixed Numbers

To subtract fractions and mixed numbers, first rename each fraction by finding the LCD if necessary. Then rename, if necessary, to subtract. Next subtract the fractions and then the whole numbers. Rename and simplify if necessary.

Example 1 **Find $4\frac{2}{5} - 1\frac{9}{10}$.**

Step 1	Step 2	Step 3
Rename each fraction finding the LCD if necessary. $4\frac{2}{5} \rightarrow 4\frac{4}{10}$ $-1\frac{9}{10} \rightarrow -1\frac{9}{10}$	Rename if necessary to subtract. $4\frac{4}{10} = 3 + \frac{10}{10} + \frac{4}{10}$ $= 3\frac{14}{10}$ $4\frac{4}{10} \rightarrow 3\frac{14}{10}$ $-1\frac{9}{10} \rightarrow -1\frac{9}{10}$	Subtract and simplify if necessary. $3\frac{14}{10}$ $-1\frac{9}{10}$ $2\frac{5}{10}$ or $2\frac{1}{2}$

Example 2 **Find $6 - 3\frac{1}{6}$.**

$$6 \rightarrow 5\frac{6}{6}$$
$$-3\frac{1}{6} \rightarrow -3\frac{1}{6}$$
$$2\frac{5}{6}$$

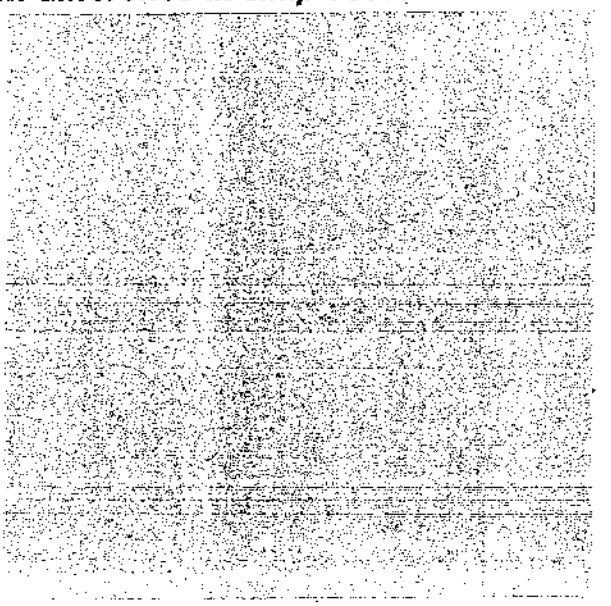
Subtract. Write each difference in simplest form.

1. $14\frac{2}{3} - 12$

4. $8\frac{1}{3} - 4\frac{2}{3}$

5. $15\frac{1}{4} - 5\frac{1}{2}$

8. $18\frac{3}{10} - 7\frac{4}{5}$



SKILL 25

Name _____ Date _____ Period _____

Multiplying Fractions and Mixed Numbers

To multiply fractions: Multiply the numerators. Then multiply the denominators.

$$\frac{5}{6} \times \frac{3}{5} = \frac{5 \times 3}{6 \times 5} = \frac{15}{30} = \frac{1}{2}$$

To multiply mixed numbers: Rename each mixed number as a fraction. Multiply the fractions.

$$7 \times 1\frac{1}{4} = \frac{7}{1} \times \frac{5}{4} = \frac{35}{4} = 8\frac{3}{4}$$

Multiply. Write each product in simplest form.

1. $\frac{2}{3} \times \frac{1}{4}$

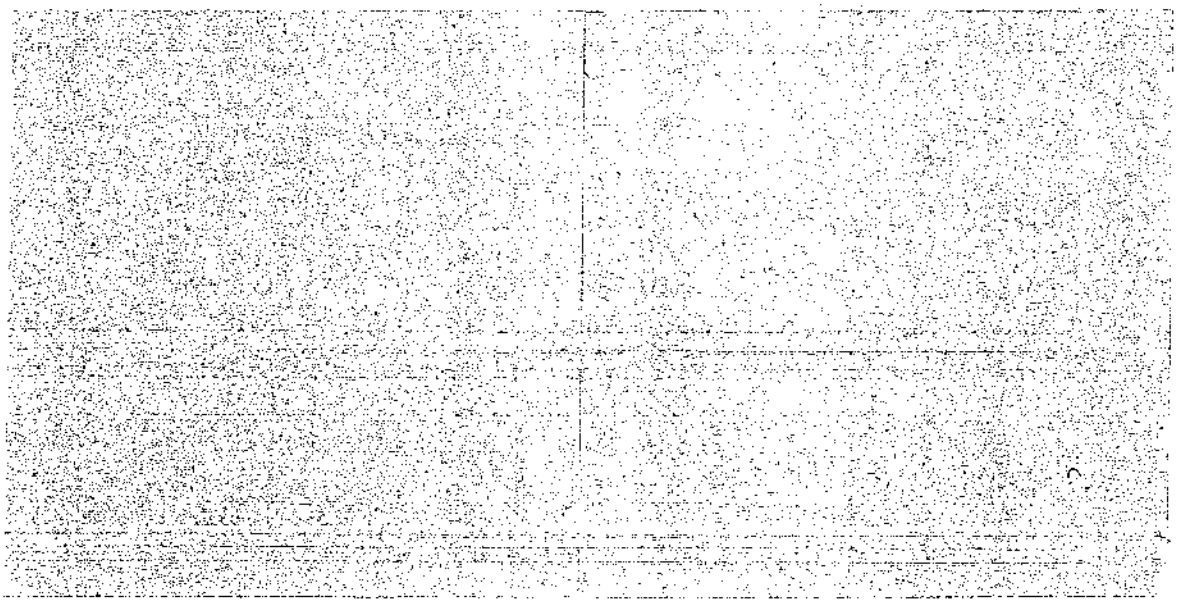
2. $\frac{3}{7} \times \frac{1}{2}$

3. $\frac{1}{3} \times \frac{3}{5}$

4. $\frac{1}{2} \times \frac{6}{7}$

5. $\frac{3}{8} \times 4$

6. $\frac{7}{10} \times \frac{5}{7}$



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Dividing Fractions and Mixed Numbers

To divide fractions and mixed numbers:

1. Write any mixed numbers as improper fractions.
2. Find the reciprocal of the divisor.
3. Multiply the dividend by the reciprocal of the divisor.

Examples **1** $\frac{5}{8} \div \frac{5}{12}$ *The reciprocal of $\frac{5}{12}$ is $\frac{12}{5}$.*

$$\frac{5}{8} \div \frac{5}{12} = \frac{5}{8} \times \frac{12}{5}$$
$$= \frac{60}{40} \text{ or } 1\frac{1}{2}$$

2 $7 \div 3\frac{1}{2} \longrightarrow \frac{7}{1} \div \frac{7}{2}$ *The reciprocal of $\frac{7}{2}$ is $\frac{2}{7}$.*

$$7 \div 3\frac{1}{2} = \frac{7}{1} \times \frac{2}{7}$$
$$= \frac{14}{7} \text{ or } 2$$

Name the reciprocal of each number.

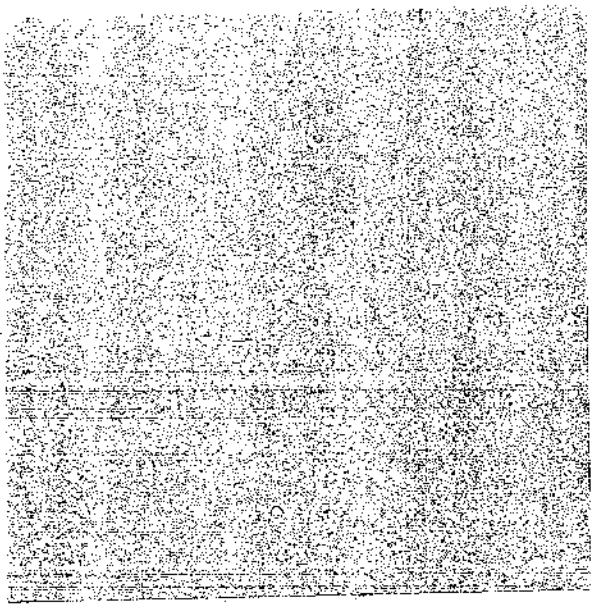
1. $\frac{6}{11}$
2. $\frac{14}{5}$
3. 8
4. $\frac{1}{5}$

Divide. Write each quotient in simplest form.

5. $\frac{7}{8} \div \frac{1}{4}$
6. $\frac{2}{5} \div \frac{5}{8}$

8. $8 \div \frac{1}{3}$
9. $\frac{5}{9} \div 5$

11. $2\frac{1}{2} \div 5$



Name _____ Date _____

6-6 Study Guide

Subtracting Mixed Numbers with Renaming

Sometimes it is necessary to rename a mixed number as an improper fraction before you can subtract.

Examples **1** $6\frac{1}{2} - 2\frac{3}{4} \rightarrow 6\frac{2}{4} - 2\frac{3}{4}$ *You cannot subtract $\frac{3}{4}$ from $\frac{2}{4}$.* $\rightarrow 5\frac{6}{4} - 2\frac{3}{4} = 3\frac{3}{4}$ *Rename $6\frac{2}{4}$ as $5\frac{6}{4}$. Then subtract.*

2 $8 - 4\frac{5}{8} \rightarrow 7\frac{8}{8} - 4\frac{5}{8} = 3\frac{3}{8}$ *Rename 8 as $7\frac{8}{8}$. Then subtract.*

Complete.

1. $7\frac{5}{6} = \square\frac{11}{6}$

2. $4\frac{3}{4} = 3\frac{\square}{4}$

3. $2\frac{3}{8} = 1\frac{\square}{8}$

Subtract. Write each answer in simplest form.

10. $5\frac{1}{3} - 3\frac{2}{3}$

12. $8\frac{3}{8} - 3\frac{5}{8}$

14. $12 - 1\frac{2}{5}$

16. $15\frac{1}{3} - 9\frac{5}{6}$

18. $22 - 10\frac{8}{9}$

Name _____ Date _____

4-7 Study Guide

Zeros in the Quotient

Remember to write a zero in the quotient when you need a placeholder.

Examples

Use zero as a placeholder in the ones place.

$$\begin{array}{r} 0.8 \\ 7\overline{)5.6} \\ -\,5\,6 \\ \hline 0 \end{array}$$

There are no 19s in 2. Use zero as a placeholder.

$$\begin{array}{r} 0.012 \\ 19\overline{)0.228} \\ -\,0 \\ \hline 22 \\ -\,19 \\ \hline 38 \\ -\,38 \\ \hline 0 \end{array}$$

There are no 27s in 18. Use zero as a placeholder.

$$\begin{array}{r} 1.07 \\ 2.7\overline{)2.889} \\ -\,2\,7 \\ \hline 18 \\ -\,0 \\ \hline 189 \\ -\,189 \\ \hline 0 \end{array}$$

Find each quotient to the nearest hundredth.

6. $0.158 \div 7.9$

7. $19.065 \div 9.3$

8. $0.102 \div 34$

9. $72.76 \div 6.8$

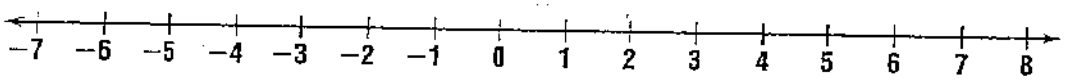
Name _____ Date _____

11-2 Study Guide

Comparing and Ordering Integers

You can use a number line to compare integers. On a number line, the number on the left is always less than the number on the right.

Examples **1** Replace the ◯ in -3 ◯ -7 with $<$, $>$, or $=$.



-7 is to the left of -3, so $-3 > -7$.

2 Order the integers $-5, 2, 0, -1$ from least to greatest.

Write the integers as they appear on the number line from left to right.

$-5, -1, 0, 2$

Replace each ◯ with $<$, $>$, or $=$ to make a true sentence.

1. -2 ◯ 0
2. 5 ◯ -1
3. -4 ◯ 4
5. -44 ◯ -4
6. -19 ◯ 9
7. -13 ◯ -23

Order each set of integers from least to greatest.

9. $-2, 4, 0, -1, 1$

0

13. $-7, -19, 19, 0, -25, 30$

14. $55, -15, -5, -55, 5, 15$

Name _____ Date _____

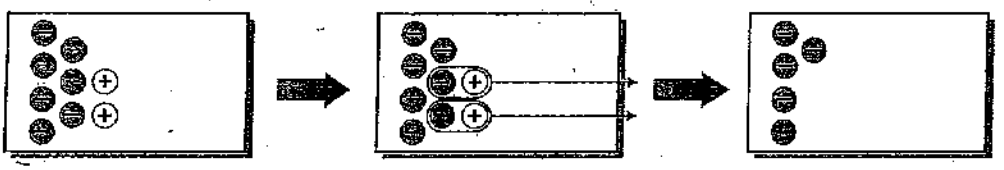
11-3 Study Guide

Adding Integers

You can add integers using models.

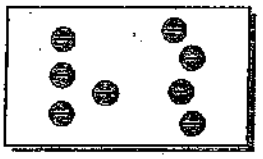
Examples **1** **Use counters to find $-7 + 2$.**

Place 7 negative counters on the mat to represent -7.
Place 2 positive counters on the mat to represent adding 2.
Pair the positive and negative counters.
Remove as many zero pairs as possible.



There are 5 negative counters left on the mat.
So, $-7 + 2 = -5$.

2 **Use counters to find $-4 + (-4)$.**
Place 4 negative counters on the mat to represent -4.
Place 4 more negative counters on the mat to represent adding -4.
Since there are no positive counters, you cannot remove any zero pairs.



There are 8 negative counters left on the mat.
So, $-4 + (-4) = -8$.

State whether each sum is positive or negative.

2. $5 + (-3)$

5. $6 + 0$

6. $-8 + (-1)$

Find each sum. Use counters or a number line if necessary.

7. $3 + (-6)$

8. $-9 + 8$

9. $-4 + 7$

10. $6 + (-6)$

11. $-8 + (-2)$

12. $2 + (-5)$

Name _____ Date _____

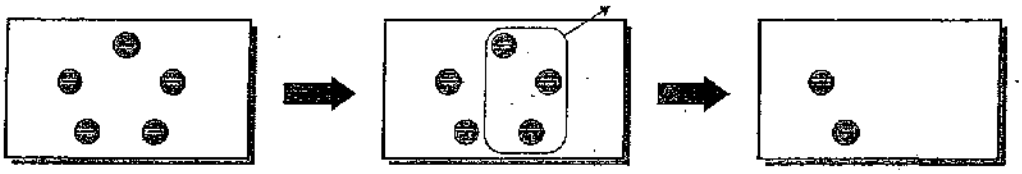
11-4 Study Guide

Subtracting Integers

You can subtract integers using models.

Examples **1** **Use counters to find $-5 - (-3)$.**

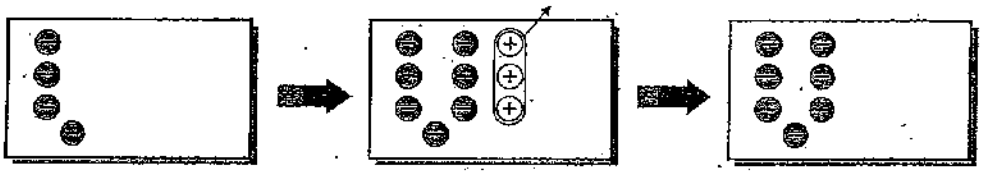
Place 5 negative counters on the mat to represent -5.
Remove 3 negative counters to represent subtracting -3.



There are 2 negative counters left on the mat.
So, $-5 - (-3) = -2$.

2 **Use counters to find $-4 - 3$.**

Place 4 negative counters on the mat to represent -4.
To subtract $+3$, you must remove 3 positive counters.
But there are no positive counters on the mat. You must add 3 zero pairs to the mat. The value of the mat does not change. Then you can remove 3 positive counters.



There are 7 negative counters left on the mat.
So, $-4 - 3 = -7$.

Find each difference. Use counters or a number line if necessary.

2. $7 - (-5)$

4. $-3 - (-5)$

6. $8 - 5$

8. $2 - (-2)$

10. $7 - 2$

12. $8 - (-2)$

Name _____ Date _____

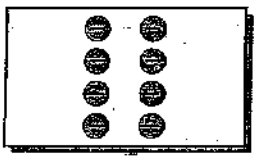
11-5 Study Guide

Multiplying Integers

Multiplication is repeated addition. You can multiply integers using models.

Examples **1** **Use counters to find $4 \times (-2)$.**

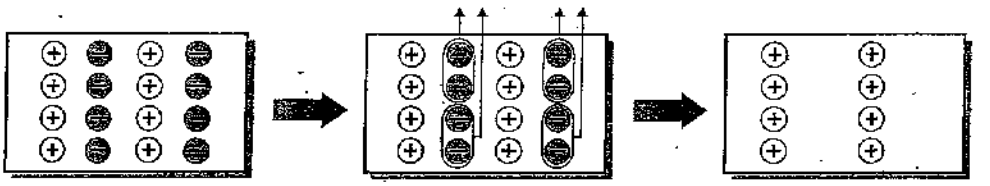
$4 \times (-2)$ means to *put in* 4 sets of 2 negative counters. Place these counters on the mat.



There are 8 negative counters on the mat.
So, $4 \times (-2) = -8$.

2 **Use counters to find $-4(-2)$.**

Since -4 is the opposite of 4, $-4(-2)$ means to *remove* 4 sets of 2 negative counters. Add 4 sets of zero pairs. Then remove 4 sets of 2 negative counters.



There are 8 positive counters left on the mat.
So, $-4(-2) = 8$.

Find each product. Use counters or a number line if necessary.

2. $-5 \times (-2)$

4. $-7(8)$

6. $-7(-5)$

8. $-10(-4)$

10. $-3(-10)$

12. $-7(-7)$

Name _____ Date _____

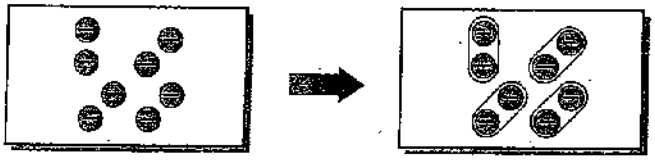
1.1-6 Study Guide

Dividing Integers

You can use counters to help you divide integers.

Example 1 **Use counters to find $-8 \div 4$.**

Place 8 negative counters on the mat to represent -8.
Separate the 8 counters into 4 equal-sized groups.



There are 4 groups of 2 negative counters each.
So, $-8 \div 4 = -2$.

You can also use the relationship between multiplication and division to help you divide integers.

Examples 2 **Find $-15 \div (-3)$.**

$5 \times (-3) = -15$, so $-15 \div (-3) = 5$.

3 **Find $18 \div (-2)$.**

$-9 \times (-2) = 18$, so $18 \div (-2) = -9$.

When you divide a negative integer and a positive integer, the quotient is negative. When you divide two negative integers, the quotient is positive.

Find each quotient. Use counters or patterns if necessary.

2. $-40 \div (-8)$

4. $-72 \div 8$

6. $-81 \div (-9)$

8. $-100 \div (-5)$

10. $-93 \div (-3)$

12. $-64 \div (-8)$