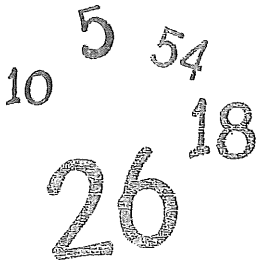
Students Entering

Sixth Grade

Summer Math Packet

Name _____



Dear Parents,

The attached packet provides a range of activities that review and expand on the math concepts your child has learned in school this past year. It is designed to be worked on for 15 to 30 minutes a day throughout the summer, rather than completed in just a few days at the beginning or end of summer. The goal is to keep skills sharp to be ready to move forward into the next school year. We have provided answers for grades 3-6 and ask you to please review the work with your child as it is completed. Students will be asked to hand in their completed work the first week of school.

Have a great summer!

Table of Contents

Name _____

Review 2

Adding and Subtracting Decimals

Find 1.7 + 2.45.

Line up the decimal points.

```
   1.7        1.70
 + 2.45     + 2.45
            4.15
```

← *Write zeros to show place value.*

↑ *Place decimal point in answer.*

Find 36.57 − 4.6.

Line up the decimal points.

```
  36.57      36.57
 − 4.6      − 4.60
            31.97
```

← *Write zeros to show place value.*

↑ *Place decimal point in answer.*

Find each sum or difference.

1. 2.65 + 13.30 = _____
2. 14.10 − 3.05 = _____
3. 744 + 36.2 = _____
4. 9 − 0.6 = _____
5. 8.97 + 66 = _____
6. 100 − 0.22 = _____
7. 6.8 + 237.29 = _____
8. 0.5 − 0.23 = _____
9. 15.4 − 8 = _____
10. 3 − 2.54 = _____
11. 1.34 + 4.1 = _____
12. 133.01 − 5.6 = _____
13. 448 + 1.75 + 80.3 = _____
14. 12.3 + 0.61 + 100 = _____
15. On the 3-days of their vacation, the Davis family traveled 417 mi, 45.3 mi, and 366.9 mi. How far did they travel all together? _____
16. Etta bought a calculator for $15. Glenn found the same model for $9.79. How much more did Etta pay than Glenn did? _____

Name _____

Review 4

Multiplying with Decimals

Find 4.3 × 2.7.

Multiply as you would with whole numbers.	*Count the number of decimal places in both factors. The total is the number of decimal places in the product.*
2 4.3 × 2.7 301 860 1161	4.3 ← 1 decimal place × 2.7 ← + 1 decimal place 11.61 ← 2 decimal places

Find each product.

1. 14 × 8.8 = 112, 1120

2. 1.6 × 9

3. 0.4 × 3.2

4. 0.05 × 0.3

5. 2.15 × 8.3

6. 3.3 × 0.12

7. 0.51 × 4.2

8. 1.35 × 13

9. 23 × 0.47 = _____

10. 0.9 × 5 = _____

11. 168 × 2.25 = _____

12. 0.8 × 0.11 = _____

13. 20 × 20.2 = _____

14. 4.9 × 0.3 = _____

15. A roll of paper towels contained 250 sheets. Each sheet was 8.75 inches long. How long was the roll? _____

16. Tania bought 3 new sweaters. Each sold for $19.99. How much did she spend? _____

Name _____

Review 6

Dividing with Decimals

Find 36.8 ÷ 16.

↓ Place the decimal point. 2 . 1 6)3 6 . 8 ← Think: 20)40 Try 2 in the quotient.	2 . 3 1 6)3 6 . 8 −3 2 Multiply 2 × 16. 4 8 Subtract. Bring down 8. −4 8 Multiply 3 × 16. 0 Subtract.

Find each quotient.

1. 6)1 3 . 8 (2 .)
−[1][2]
[ ][ ]
−[ ][ ]
[ ]

2. 6)1 3 1 . 4

3. 9)1 4 1 . 3

4. 5)3 8 8 . 5

5. 7)6 6 9 . 2

6. 2 8)2 6 3 . 2

7. 4 1)2 7 4 . 7

8. 7)3 4 . 2 3

9. 269.12 ÷ 8 = _____

10. 311.56 ÷ 4 = _____

11. 2,229.62 ÷ 46 = _____

12. 1,449.09 ÷ 81 = _____

13. A photographer bought 36 rolls of film for $136.44. What was the price of one roll? _____

14. Four students each ran 100 m in a 400-m relay race. The team's total time was 49.44 sec. Find the average time of each runner. _____

3

Name _____

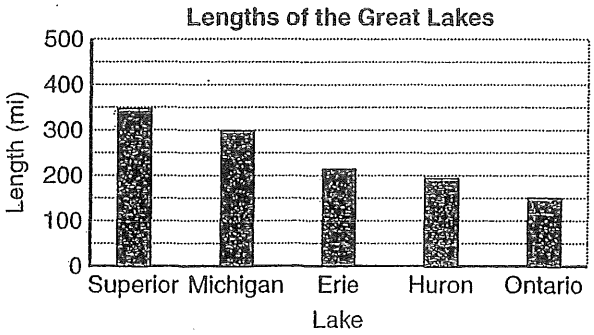
Review 8

Interpreting Data

The **bar graph** shows the lengths in miles of the Great Lakes. Lengths of bars represent lengths of lakes.

Which is the shortest Great Lake?

The shortest lake is Lake Ontario.



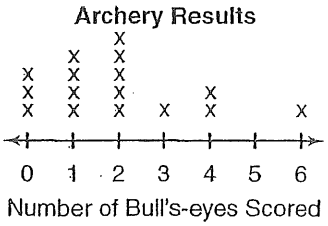
Use the graphs to answer each question.

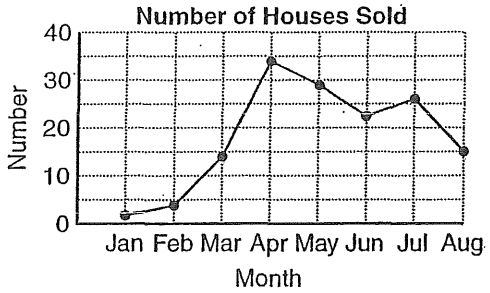
1. How many archers scored 4 bull's eyes?

_____

2. What was the most common number of bull's-eyes scored?

_____





3. In which month were the most houses sold?

_____

4. In which month were about the same number sold as were sold in August?

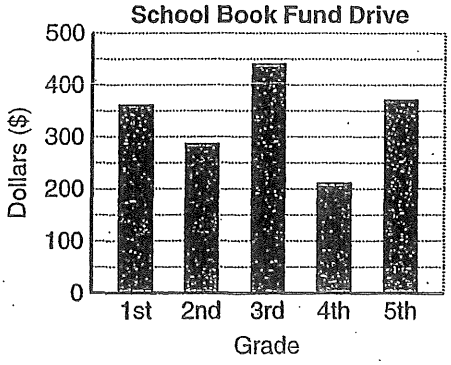
_____

5. Which grades raised about the same amount for the school book drive?

_____

6. The school's goal was to raise $1,500. About how much did they raise in all?

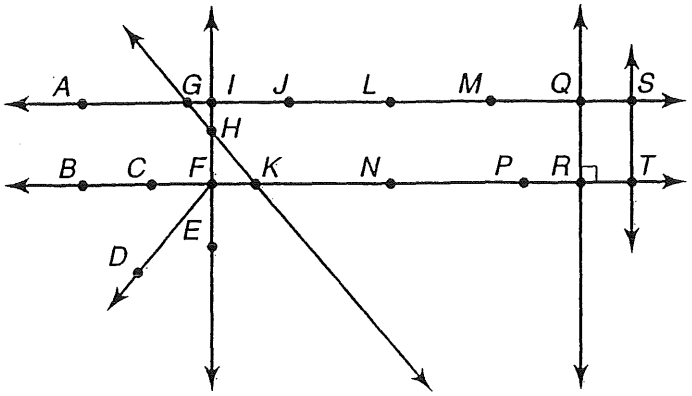
_____



Name _____

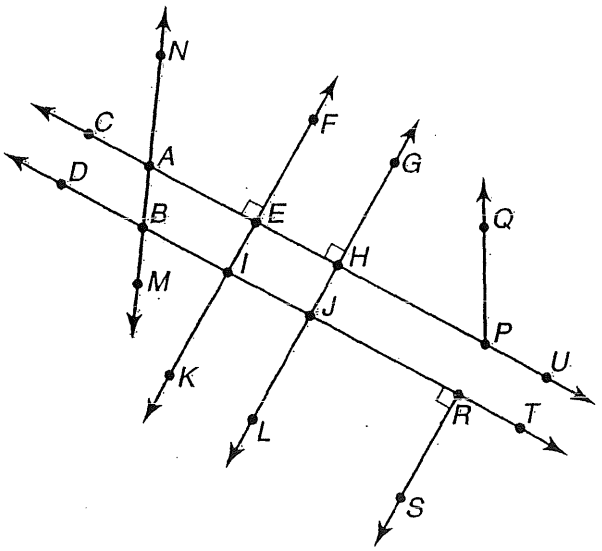
Geometric Ideas

R 9-1



- A **line** is a straight path of points that goes on forever in two directions. Examples: $\overleftrightarrow{AS}$, $\overleftrightarrow{GK}$.
- A **ray** is a part of a line with one endpoint, extending forever in only one direction. Examples: $\overrightarrow{FD}$, $\overrightarrow{FB}$.
- A **line segment** is part of a line with two endpoints. Examples: $\overline{CF}$, $\overline{MQ}$.
- A **midpoint** is the point halfway between the endpoints of a line segment. Example: Point L is halfway between points J and M on $\overline{JM}$.
- **Congruent line segments** are line segments that have the same length. Example: $\overline{QR}$ is congruent to $\overline{ST}$.
- **Parallel lines** are in the same plane but do not intersect. Example: $\overleftrightarrow{AS}$ is parallel to $\overleftrightarrow{BT}$.

Use the diagram at the right. Name the following.



1. three line segments

_____

2. two parallel lines

_____

3. two lines that intersect $\overleftrightarrow{DT}$

_____

4. two congruent line segments

_____

5. two lines perpendicular to $\overleftrightarrow{BR}$

_____

6. two midpoints of line segments

_____

5

Name _____

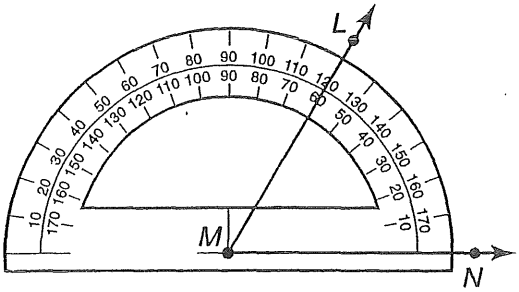
Measuring and Drawing Angles

R 9-2

How to measure an angle:

Step 1 Place the protractor's center on the angle's vertex.

Step 2 Place the 0° mark on one side of the angle.



LMN = 60°

Step 3 Use the scale beginning with the 0° mark to read the measurement where the other side of the angle crosses the protractor.

How to draw an angle:

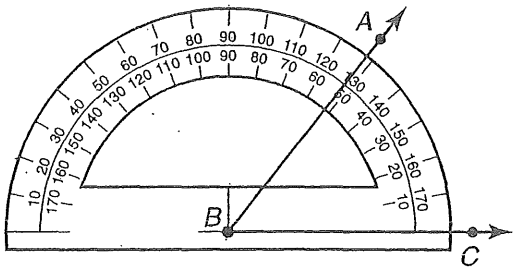
Draw an angle of 52°.

Step 1 Draw a ray.

Step 2 Place the protractor's center on the endpoint. Line up the ray with the 0° mark.

Step 3 Using the scale with the 0° mark, place a point at 52°.

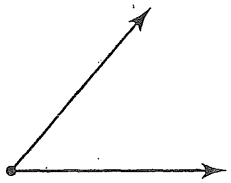
Step 4 Draw the other ray.



∠*ABC* = 52°

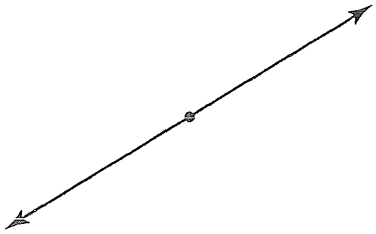
Classify each angle as acute, right, obtuse, or straight. Then measure the angle.

1.



_____

2.



_____

Draw an angle with each measure.

3. 45°

4. 120°

Name _____

Review 10

Adding and Subtracting Fractions

Find $\frac{2}{3} + \frac{1}{6}$.

3	6	9	12	15	Multiples of 3
6	12	18	24	30	Multiples of 6

The least common denominator is 6.

Write equivalent fractions. $\frac{2}{3} = \frac{4}{6}$

Add. $+\frac{1}{6} = \frac{1}{6}$

$\frac{5}{6}$

Find $\frac{1}{4} - \frac{1}{5}$.

4	8	12	16	20	Multiples of 4
5	10	15	20	25	Multiples of 5

The least common denominator is 20.

Write equivalent fractions. $\frac{1}{4} = \frac{5}{20}$

Subtract. $-\frac{1}{5} = \frac{4}{20}$

$\frac{1}{20}$

Find each sum or difference.

1. $\frac{1}{4} + \frac{2}{3} =$ _____

4			
3			

2. $\frac{11}{12} - \frac{5}{6} =$ _____

12			
6			

3. $\frac{1}{3} + \frac{4}{9} =$ _____

4. $\frac{3}{7} + \frac{2}{7} =$ _____

5. $\frac{11}{12} - \frac{5}{12} =$ _____

6. $\frac{1}{2} + \frac{1}{3} =$ _____

7. $\frac{1}{3} - \frac{1}{5} =$ _____

8. $\frac{3}{8} - \frac{1}{6} =$ _____

9. $\frac{3}{5} + \frac{3}{10} =$ _____

10. $\frac{1}{2} + \frac{2}{5} =$ _____

11. $\frac{2}{3} - \frac{1}{4} =$ _____

12. Meg practiced the piano for $\frac{5}{12}$ hr. She did homework for $\frac{3}{4}$ hr. How much longer did she do homework than she practiced the piano?

_____

7

Name _____

Adding Mixed Numbers

R 4-5

To add mixed numbers, you can add the fractional parts to the whole number parts, and then simplify.

Find $2\frac{2}{4} + 3\frac{1}{4}$.

The fractions have a common denominator. Add the fractions. Then add the whole numbers.

$$\begin{array}{r} 2\frac{2}{4} \\ +3\frac{1}{4} \\ \hline 5\frac{3}{4} \end{array}$$

Find $3\frac{2}{3} + 4\frac{1}{9}$.

Write equivalent fractions with the LCD.

$$\begin{array}{rcl} 3\frac{2}{3} & = & 3\frac{6}{9} \\ +4\frac{1}{9} & = & 4\frac{1}{9} \\ \hline \end{array}$$

Add the whole numbers.
Add the fractions.
Simplify if possible.

$$\begin{array}{r} 3\frac{6}{9} \\ +4\frac{1}{9} \\ \hline 7\frac{7}{9} \end{array}$$

Find $4 + 3\frac{3}{5}$.

Add the whole numbers; then add the fraction.

$$\begin{array}{r} 4 \\ +3\frac{3}{5} \\ \hline 7\frac{3}{5} \end{array}$$

Find each sum. Simplify your answer.

1. $2\frac{1}{5} + 2\frac{3}{5} =$ _____
2. $4\frac{2}{3} + 1\frac{1}{6} =$ _____
3. $5\frac{3}{5} + \frac{3}{10} =$ _____
4. $8\frac{5}{8} + 1\frac{5}{12} =$ _____
5. $6\frac{1}{4} + 11\frac{3}{8} =$ _____
6. $7 + 8\frac{1}{3} =$ _____
7. In 2001, the men's indoor pole vault record was $20\frac{1}{6}$ ft. The women's record for the indoor pole vault was $15\frac{5}{12}$ ft. What is the combined height of the two records? _____
8. **Writing in Math** How high is a stack of library books if one book is $1\frac{3}{8}$ in. high, the second book is $1\frac{5}{6}$ in. high, and the third is $2\frac{1}{3}$ in. high? Explain how you solved this problem.

_____

_____

_____

Name _____

Review 12

Subtracting Mixed Numbers

Subtract $3\frac{2}{3} - 2\frac{1}{6}$.

Write equivalent fractions.	*Subtract the fractions.*	*Subtract the whole numbers. Simplify.*
$3\frac{2}{3} = 3\frac{4}{6}$ $-\ 2\frac{1}{6} = 2\frac{1}{6}$ The LCD of 3 and 6 is 6.	$3\frac{2}{3} = 3\frac{4}{6}$ $-\ 2\frac{1}{6} = 2\frac{1}{6}$ $\frac{3}{6}$	$3\frac{2}{3} = 3\frac{4}{6}$ $-\ 2\frac{1}{6} = 2\frac{1}{6}$ $1\frac{3}{6} = 1\frac{1}{2}$

Find each difference. Simplify.

1. $3\frac{1}{3} = 3\frac{5}{15}$
$-\ 2\frac{1}{5} = 2\frac{3}{15}$

2. $2\frac{1}{3} = 2\frac{2}{6}$
$-\ 1\frac{1}{6} = 1\frac{1}{6}$

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

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

5. $3\frac{7}{10}$
$-\ 1\frac{2}{5}$

6. $7\frac{7}{8}$
$-\ 2\frac{3}{4}$

7. $3\frac{3}{4}$
$-\ 2\frac{1}{6}$

8. $5\frac{5}{6}$
$-\ 1\frac{1}{8}$

9. $2\frac{2}{3} - 1\frac{1}{4} =$ _____

10. $4\frac{3}{4} - 4\frac{2}{5} =$ _____

11. $2\frac{1}{3} - 1\frac{2}{3} =$ _____

12. $4\frac{4}{9} - 3\frac{2}{3} =$ _____

13. $3\frac{3}{8} - 2\frac{5}{6} =$ _____

14. $5\frac{1}{3} - 2\frac{5}{8} =$ _____

15. Greg found two rocks for his collection. One weighed $4\frac{1}{4}$ lb and the other weighed $2\frac{7}{8}$ lb. Find the difference in weights. _____

Name _____

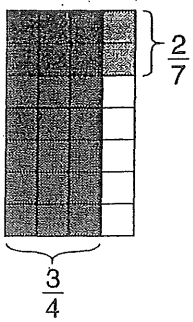
Multiplying Fractions

R 5-2

Find $\frac{3}{4} \times \frac{2}{7}$.

One Way

Draw a picture. Simplify if possible.



6 of the 28 squares have overlapping shading.

So, $\frac{3}{4} \times \frac{2}{7} = \frac{6}{28}$.

Simplify $\frac{6}{28}$ to $\frac{3}{14}$.

Another Way

Multiply the numerators and denominators. Simplify if possible.

$$\frac{3}{4} \times \frac{2}{7}$$
$$= \frac{3 \times 2}{4 \times 7} = \frac{6}{28}$$
$$= \frac{3}{14}$$

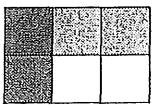
Simplify First

Find the GCF of any numerator and any denominator.

The GCF of 2 and 4 is 2. Divide 2 and 4 by the GCF.

$$\frac{3}{\cancel{4}_{2}} \times \frac{\cancel{2}^{1}}{7} = \frac{3}{14}$$

Write an equation for each picture.

1. 

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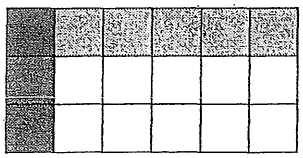
2. 

_____

Find each product. Simplify if possible.

3. $\frac{6}{8} \times \frac{1}{3} =$ _____

4. $\frac{5}{6} \times \frac{7}{10} =$ _____

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

6. $\frac{1}{2} \times \frac{4}{9} =$ _____

7. **Number Sense** Can you simplify before multiplying $14 \times \frac{25}{27}$? Explain.

_____

_____

10

Name _____

Multiplying Mixed Numbers

R 5-4

How to find the product of two mixed numbers:

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

Step 1

Estimate by rounding.

$$3\frac{2}{3} \times 4\frac{1}{2}$$
$$\downarrow \qquad \downarrow$$
$$4 \times 5 = 20$$

Then write each mixed number as an improper fraction.

$$3\frac{2}{3} \times 4\frac{1}{2}$$
$$\downarrow \qquad \downarrow$$
$$\frac{11}{3} \times \frac{9}{2}$$

Step 2

Look for common factors and simplify.

$$\frac{11}{\cancel{3}_{1}} \times \frac{\cancel{9}^{3}}{2} = \frac{11}{1} \times \frac{3}{2}$$

Step 3

Multiply. Write the product as a mixed number.

$$\frac{11}{1} \times \frac{3}{2} = \frac{33}{2} = 16\frac{1}{2}$$

$16\frac{1}{2}$ is close to 20, so the answer is reasonable.

Find each product. Simplify if possible.

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

2. $2\frac{1}{5} \times 2\frac{2}{3} =$ _____

3. $6 \times 3\frac{1}{4} =$ _____

4. $1\frac{2}{5} \times 3\frac{1}{4} =$ _____

5. $4\frac{1}{2} \times 16 =$ _____

6. $1\frac{3}{8} \times 2\frac{1}{2} =$ _____

7. Number Sense Is $2 \times 17\frac{5}{6}$ greater than or less than 36? Explain.

_____

_____

_____

_____

Name _____

Review 14

Problem Solving: Strategies

A computer store has 25 printers and computers. There are 7 more printers than computers. How many of each are there?

	Printers	Computers	Check
Guess 1	20	5	20 − 5 = 1
Guess 2	14	11	14 − 11 = 3
Guess 3	16	9	16 − 9 = 7√

Solution: There are 16 printers and 9 computers.

Problem Solving Strategies

- Act It Out
- Draw a Picture
- Look For a Pattern
- **Try, Check, and Revise**
- Make an Organized List
- Make a Table
- Solve a Simpler Problem
- Work Backward

Use any strategy to solve.

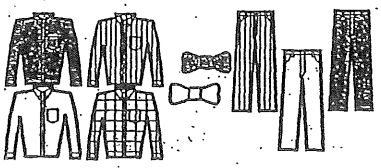
1. At the veterinarian's office, Terri learned that her dog weighed 4 times as much as her cat. Together the pets weighed 40 lbs. How much did the dog weigh? _____

2. Yasmin arrived home from play practice at 4:25 P.M. The walk home took 15 minutes. Practice began 20 minutes after the final bell and lasted for a half hour. When did school end? _____

3. Vanessa, Diego, Rose and Randy stood in line for lunch. Rose was just behind Vanessa. Diego was not next to Rose or Randy. Write the line order. _____

4. Students played dodge ball and volleyball for 45 minutes. They played dodge ball for 11 more minutes than they played volleyball. How long did they play dodge ball? _____

5. Mr. Jones has 4 shirts, 2 ties, and 3 pair of pants. How many days in a row can he wear a different outfit? _____



Name _____

Customary Measurement

R 10-1

Units of Length

foot (ft)	1 ft = 12 in.
yard (yd)	1 yd = 3 ft
	1 yd = 36 in.
mile (mi)	1 mi = 5,280 ft
	1 mi = 1,760 yd

Units of Capacity

cup (c)	1 c = 8 fluid ounces (oz)
pint (pt)	1 pt = 2 c
quart (qt)	1 qt = 2 pt
gallon (gal)	1 gal = 4 qt

How to change from one unit of measurement to another:

To change from larger units to smaller units in the customary system, you have to multiply.

120 yd = _____ ft

1 yd = 3 ft

120 × 3 ft = 360 ft

120 yd = 360 ft

To change from smaller units to larger ones, you have to divide.

256 oz = _____ c

1 c = 8 oz

256 ÷ 8 = 32

256 oz = 32 c

Complete.

1. 36 in. = _____ ft
2. 4 qt = _____ c
3. 5 lb = _____ oz
4. 39 ft = _____ yd
5. 1.5 mi = _____ ft
6. 3.5 gal = _____ qt
7. 2 T = _____ lb
8. 16 pt = _____ qt
9. 64 oz = _____ lb
10. 3 yd = _____ in.
11. 4 gal = _____ pt
12. 55 yd = _____ ft
13. 6.5 lb = _____ oz
14. 20 pt = _____ gal
15. 4.5 qt = _____ c
16. 205 yd = _____ ft
17. **Reasoning** A vendor at a festival sells soup for $1.25 per cup or $3.75 per quart. Which is the better buy?

_____

Name _____

Metric Measurement

R 10-2

Changing from one metric unit to another:

To change from a larger unit to a smaller unit, multiply by a power of ten.

3.8 L = _____ mL

A liter is a larger unit than a milliliter. To change from liters to milliliters, multiply.

1 L = 1,000 mL

3.8 × 1,000 = 3,800

3.8 L = 3,800 mL

To change from a smaller unit to a larger unit, divide by a power of ten.

100 m = _____ km

The meter is a smaller unit than the kilometer. To change from meters to kilometers, divide.

1,000 m = 1 km

100 ÷ 1000 = 0.1

100 m = 0.1 km

Name the most appropriate metric unit for each measurement.

1. mass of a cow _____
2. length of a carrot _____
3. capacity of a thimble _____

Complete.

4. 45 g = _____ mg
5. 3450 mL = _____ L
6. 4.5 m = _____ mm
7. 1.68 L = _____ mL
8. 28 cm = _____ mm
9. 7,658 g = _____ kg
10. 600 cm = _____ m
11. 5,000 mg = _____ g
12. 5.1 km = _____ m
13. 1.780 L = _____ mL
14. 0.780 L = _____ mL
15. 4,300 m = _____ km
16. 9,000 cm = _____ m
17. 8,000 mg = _____ g
18. **Reasoning** It is recommended that people have 1 g of calcium each day. How many milligrams of calcium is that?

_____

14

Name _____

Review 16

Perimeter

Perimeter is the distance around a shape.

You can add the lengths of all the sides or you can multiply the sum of the length and the width by 2 to find the perimeter of a rectangle. 25 in. 9 in. p = 25 in. + 9 in. + 25 in. + 9 in. = 68 in. **or** $p = 2 \times$ (25 in. + 9 in.) = 68 in.	If only one side of a figure is given, then all sides have the same length. 5 cm p = 5 cm + 5 cm + 5 cm + 5 cm = 20 cm **or** $p = 4 \times 5$ cm = 20 cm

1. Find the perimeter of the rectangle.

8 m

6 m

p = ___ + ___ + ___ + ___ = ___ m

2. Find the perimeter of the square.

3 in.

p = ___ × ___ = ___ in.

Find the perimeter of each figure.

3. 1 ft, 3 ft

_____

4. 2 m, 3 m, 4 m

_____

5. 12 in.

_____

6. 4.5 yd

_____

7. $2\frac{1}{4}$ in., $1\frac{1}{4}$ in.

_____

8. 24 cm, 20 cm, 12 cm, 14 cm

_____

9. 4 in., 5 in., 7 in., 4 in.

_____

10. 8 m

_____

11. A flower garden is in the shape of an equilateral triangle. Each side measures $15\frac{3}{8}$ ft. What is the garden's perimeter? _____

Name _____

Area of Squares and Rectangles

R 10-8

You can use formulas to find the area of a square or rectangle.

Find the area of a square that is 7.2 m on each side.

Use the formula $A = s^2$.

$A = (7.2)^2$

$A = 51.84$

The area is 51.84 m^2.

Find the area of a rectangle with a length (l) of 4 cm and a width (w) of 12 cm.

Use the formula $A = l \times w$.

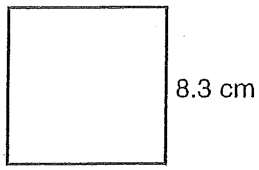
$A = 4 \times 12$

$A = 48$

The area is 48 cm^2.

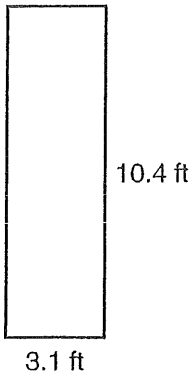
Find the area of each figure.

1.



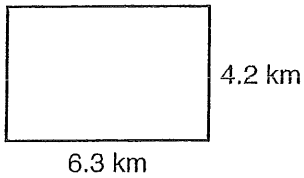
_____

2.



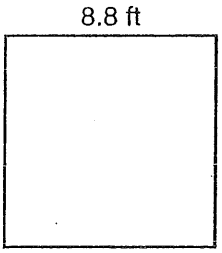
_____

3.



_____

4.



_____

5. **Reasoning** What is the length of a rectangle that has an area of 120 ft^2 and a width of 8 ft? _____

6. **Number Sense** What is the area of a square that is 12.4 cm on each side? _____

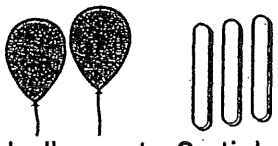
116

Name _____

Review 18

Ratio and Proportion

You can use **ratios** to compare two quantities.



2 balloons to **3** sticks

You can write ratios as:

words	2 to 3
with a colon	2:3
as a fraction	$\frac{2}{3}$

A statement that two ratios are equal is called a **proportion.**

$$\frac{\textbf{1}\text{ balloon}}{\textbf{2}\text{ sticks}} = \frac{\textbf{2}\text{ balloons}}{\textbf{4}\text{ sticks}}$$

$$\frac{1}{2} = \frac{1 \times 2}{2 \times 2} = \frac{2}{4}$$

$\frac{1}{2} = \frac{2}{4}$ is a proportion.

Write each ratio. Use words, a colon, or a fraction.

1. Write the ratio of squares to circles.

_____

2. The Computer Club has 20 girls and 15 boys. Write the ratio of girls to boys in the club.

_____

Tell if the ratios form a proportion. Write yes or no.

3. $\frac{3}{4}$ $\frac{9}{12}$ _____ **4.** $\frac{1}{3}$ $\frac{2}{9}$ _____ **5.** $\frac{3}{5}$ $\frac{6}{10}$ _____ **6.** $\frac{4}{6}$ $\frac{8}{18}$ _____

Complete each table so that all ratios are equal.

7.

3	6	9	12
5			

8.

2			
7	21	42	63

9.

4		20	
5	10		50

10. The ratio of the width to the length of a painting is 3 to 7. If the painting is 42 in. long, how wide is it? _____

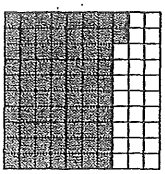
11. The ratio of the number of moons the planet Neptune has to the number that Saturn has is 4 to 9. Saturn has 18 moons. How many moons does Neptune have? _____

Name _____

Fractions, Decimals, and Percents

R 7-2

Fractions, decimals, and percents all name parts of a whole. The grid to the right has 72 out of 100 squares shaded.



72 out of 100 are shaded. As a fraction, that is $\frac{72}{100}$. As a decimal, that is 0.72. As a percent, that is 72%.

Write 40% as a fraction and decimal.

$40\% = \frac{40}{100} = 0.40$

The decimal point moves two places to the left.

Write 0.3% as a fraction and decimal.

$0.3\% = \frac{0.3}{100} = 0.003$

The decimal point moves two places to the left. Fill in any spaces with zeros.

Write 0.47 as a fraction and percent.

$0.47 = \frac{47}{100} = 47\%$

Write $\frac{3}{4}$ as a decimal and percent.

You can use a proportion:

$\frac{3}{4} = \frac{n}{100}$

$\frac{4n}{4} = \frac{300}{4}$

$n = 75$

So, $\frac{3}{4} = 0.75 = 75\%$.

Write each in two other ways.

1. $\frac{2}{10}$ _____; _____
2. $\frac{23}{100}$ _____; _____
3. $\frac{7}{10}$ _____; _____
4. 97% _____; _____
5. 16% _____; _____
6. 52% _____; _____
7. 0.04 _____; _____
8. 0.35 _____; _____
9. **Number Sense** Sheila got 87% of the problem correct. Patrick got $\frac{91}{100}$ correct. Who scored higher? _____

Name _____

Review 20

Probability

What is the probability of spinning an A?

$\frac{2}{4}$ ← number of As
$\frac{}{4}$ ← total possible outcomes

The probability is $\frac{2}{4}$ or $\frac{1}{2}$.

What is the probability of spinning a B?

$\frac{1}{4}$ ← number of Bs
$\frac{}{4}$ ← total possible outcomes

The probability is $\frac{1}{4}$.

Complete.

1. What is the probability of spinning a 1?

$\frac{\square}{\square}$ ← number of 1s
← total possible outcomes

The probability is _____.

2. What is the probability of spinning a 3?

$\frac{\square}{\square}$ ← number of 3s
← total possible outcomes

The probability is _____.

Give the probability of each outcome.

3. spinning an N _____

4. spinning an S _____

5. spinning an S or G _____

6. spinning an S, G, or N _____

A number cube has 6 sides numbered 1, 2, 3, 4, 5, and 6. Find each probability.

7. rolling a 3 _____

8. rolling an even number _____

9. rolling 3, 4, 5, or 6 _____

10. rolling anything but 1 _____

11. A hat contains 26 cards, each printed with a different letter of the alphabet. What is the probability that you will pick a vowel (A, E, I, O, U, or Y)? _____

12. There are 6 blue socks, 7 white socks, and 8 gray socks in a drawer. If you pick a sock without looking, what is the probability that it will be blue? _____

Answers and Options for Further Review

REVIEW 1

If students need more help on adding and subtracting whole numbers, use F36 and F37 in the Math Diagnosis and Intervention System.

1. 201
2. 615
3. 1,109
4. 179
5. 198
6. 980
7. 564
8. 90
9. 31
10. 109
11. 279
12. 221
13. 588
14. 1,301
15. 1,296
16. 2,109
17. 491 cards

REVIEW 2

If students need more help on adding and subtracting decimals, use I17 in the Math Diagnosis and Intervention System.

1. 15.95
2. 11.05
3. 780.2
4. 8.4
5. 74.97
6. 99.78
7. 244.09
8. 0.27
9. 7.4
10. 0.46
11. 5.44
12. 127.41
13. 530.05
14. 112.91
15. 829.2 mi
16. $5.21

REVIEW 3

If students need more help on multiplying whole numbers, use G59 in the Math Diagnosis and Intervention System.

1. 646
2. 2,408
3. 328
4. 1,196
5. 9,072
6. 7,770
7. 39,195
8. 74,304
9. 5,940
10. 8,800
11. 20,979
12. 49,680
13. 440
14. 640
15. 3,620
16. 4,896 lb
17. 504 miles

REVIEW 4

If students need more help on multiplying decimals, use I20 through I23 in the Math Diagnosis and Intervention System.

1. 123.2
2. 14.4
3. 1.28
4. 0.015
5. 17.845
6. 0.396
7. 2.142
8. 17.55
9. 10.81
10. 4.5
11. 378
12. 0.088
13. 404
14. 1.47
15. 2,187.5 in.
16. $59.97

REVIEW 5

If students need more help on dividing whole numbers, use G52, G54, G66, and G67 in the Math Diagnosis and Intervention System.

1. 19
2. 66
3. 83
4. 226
5. 319
6. 35
7. 47
8. 35
9. 58
10. 83
11. 40
12. 145
13. 102
14. 365
15. 19 points per game

REVIEW 6

If students need more help on dividing decimals, use I26 in the Math Diagnosis and Intervention System.

1. 2.3
2. 21.9
3. 15.7
4. 77.7
5. 95.6
6. 9.4
7. 6.7
8. 4.89
9. 33.64
10. 77.89
11. 48.47
12. 17.89
13. $3.79 per roll
14. 12.36 sec

REVIEW 7

If students need more help on problem solving, use M10 and M12 in the Math Diagnosis and Intervention System.

1. division; 33 teams
2. addition; 450.25 lb
3. subtraction; $48.05
4. division; $0.60 per minute
5. multiplication; $4.74

REVIEW 8

If students need more help on interpreting data, use L3, L5, and L25 in the Math Diagnosis and Intervention System.

1. 2 archers
2. 2 bull's eyes
3. April
4. March
5. 1st and 5th
6. About $1,600–$1,700

REVIEW 9

If students need more help on lines and angles, use K46 and K49 in the Math Diagnosis and Intervention System.

1. intersecting and perpendicular
2. parallel
3. intersecting
4. straight
5. obtuse
6. acute
7. right
8. obtuse
9. right
10. straight
11. acute

REVIEW 10

If students need more help on adding and subtracting fractions, use H29 and H31 in the Math Diagnosis and Intervention System.

1. $\frac{11}{12}$
2. $\frac{1}{12}$
3. $\frac{7}{9}$
4. $\frac{5}{7}$
5. $\frac{1}{2}$
6. $\frac{5}{6}$
7. $\frac{2}{15}$
8. $\frac{5}{24}$
9. $\frac{9}{10}$
10. $\frac{9}{10}$
11. $\frac{5}{12}$
12. $\frac{1}{3}$ hour

REVIEW 15

If students need more help on measurement, use K2 and K6 through K10 in the Math Diagnosis and Intervention System.

1. 108
2. 5
3. 300
4. $\frac{1}{2}$
5. 100
6. 40,000
7. 5,000
8. 2,640
9. 104
10. 4,300
11. 25,000
12. $1\frac{2}{3}$
13. 6.7
14. Yes, by 1.2 oz

REVIEW 16

If students need more help on perimeter, use K26 in the Math Diagnosis and Intervention System.

1. 28
2. 12
3. 8 ft
4. 9 m
5. 72 in.
6. 13.5 yd
7. 7 in.
8. 88 cm
9. 20 in.
10. 48 m
11. $46\frac{1}{8}$ ft

REVIEW 17

If students need more help on area, use K25 and K28 through K30 in the Math Diagnosis and Intervention System.

1. 63 in^2
2. 5 ft^2
3. 72 m^2
4. 32 in^2
5. 46.5 cm^2
6. $6\frac{1}{4}$ ft^2
7. 40 in^2
8. 180 mm^2
9. 4.5 yd^2
10. 25 ft^2
11. 75,000 yd^2

REVIEW 18

If students need more help on ratio and proportion, use I30 and I31 in the Math Diagnosis and Intervention System.

1. $\frac{4}{3}$
2. $\frac{4}{3}$
3. yes
4. no
5. yes
6. no
7.

3	6	9	12
5	10	15	20

8.

2	6	12	18
7	21	42	63

9.

4	8	20	40
5	10	25	50

10. 18 in.
11. 8 moons

REVIEW 19

If students need more help on percents, use I36 in the Math Diagnosis and Intervention System.

1. 6
2. 15
3. $\frac{1}{2}$
4. $\frac{3}{4}$
5. $\frac{1}{10}$
6. $\frac{3}{5}$
7. 0.45
8. 0.16
9. 0.78
10. 0.04
11. 8
12. 4
13. 3
14. 6.3
15. 3.5
16. 116
17. 40 students
18. 38 problems

REVIEW 20

If students need more help on probability, use L18 in the Math Diagnosis and Intervention System.

1. $\frac{3}{8}$
2. $\frac{1}{4}$
3. $\frac{1}{3}$
4. $\frac{1}{2}$
5. $\frac{2}{3}$
6. 1
7. $\frac{1}{6}$
8. $\frac{1}{2}$
9. $\frac{2}{3}$
10. $\frac{5}{6}$
11. $\frac{3}{13}$
12. $\frac{2}{7}$

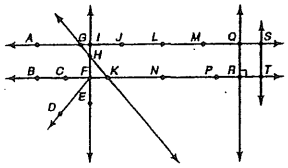
Reteaching

Name _____

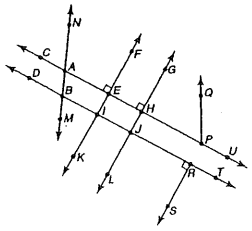
Geometric Ideas

R 9-1

- A **line** is a straight path of points that goes on forever in two directions. Examples: $\overleftrightarrow{AS}$, $\overleftrightarrow{GK}$.
- A **ray** is a part of a line with one endpoint, extending forever in only one direction. Examples: $\overrightarrow{FD}$, $\overrightarrow{FB}$.
- A **line segment** is part of a line with two endpoints. Examples: $\overline{CF}$, $\overline{MQ}$.
- A **midpoint** is the point halfway between the endpoints of a line segment. Example: Point L is halfway between points J and M on $\overline{JM}$.
- **Congruent line segments** are line segments that have the same length. Example: $\overline{QR}$ is congruent to $\overline{ST}$.
- **Parallel lines** are in the same plane but do not intersect. Example: $\overleftrightarrow{AS}$ is parallel to $\overleftrightarrow{BT}$.



Use the diagram at the right. Name the following. **Sample answers:**



1. three line segments
   $\overline{EH}$, $\overline{JR}$, $\overline{BI}$
2. two parallel lines
   $\overleftrightarrow{CU}$, $\overleftrightarrow{DT}$
3. two lines that intersect $\overleftrightarrow{DT}$
   $\overleftrightarrow{GL}$, $\overleftrightarrow{FK}$
4. two congruent line segments
   $\overline{EH}$, $\overline{IJ}$
5. two lines perpendicular to $\overleftrightarrow{BR}$
   $\overleftrightarrow{FK}$, $\overleftrightarrow{GL}$
6. two midpoints of line segments
   B on $\overline{DI}$, I on $\overline{BJ}$

Reteaching

Name _____

Fractions, Decimals, and Percents

R 7-2

Fractions, decimals, and percents all name parts of a whole. The grid to the right has 72 out of 100 squares shaded.

72 out of 100 are shaded. As a fraction, that is $\frac{72}{100}$. As a decimal, that is 0.72. As a percent, that is 72%.

Write 40% as a fraction and decimal.

$40\% = \frac{40}{100} = 0.40$

The decimal point moves two places to the left.

Write 0.3% as a fraction and decimal.

$0.3\% = \frac{0.3}{100} = 0.003$

The decimal point moves two places to the left. Fill in any spaces with zeros.

Write 0.47 as a fraction and percent.

$0.47 = \frac{47}{100} = 47\%$

Write $\frac{3}{4}$ as a decimal and percent.

You can use a proportion:

$\frac{3}{4} = \frac{n}{100}$

$\frac{4n}{4} = \frac{300}{4}$

$n = 75$

So, $\frac{3}{4} = 0.75 = 75\%$.

Write each in two other ways.

1. $\frac{2}{10}$ — 0.20; 20%
2. $\frac{23}{100}$ — 0.23; 23%
3. $\frac{7}{10}$ — 0.7; 70%
4. 97% — $\frac{97}{100}$; 0.97
5. 16% — 0.16; $\frac{16}{100}$
6. 52% — 0.52; $\frac{52}{100}$
7. 0.04 — 4%; $\frac{4}{100}$
8. 0.35 — 35%; $\frac{35}{100}$

9. **Number Sense** Sheila got 87% of the problem correct. Patrick got $\frac{91}{100}$ correct. Who scored higher? **Patrick**

Reteaching

Name _____

Multiplying Mixed Numbers

R 5-4

How to find the product of two mixed numbers:

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

Step 1

Estimate by rounding.

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

$4 \times 5 = 20$

Then write each mixed number as an improper fraction.

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

$\frac{11}{3} \times \frac{9}{2}$

Step 2

Look for common factors and simplify.

$\frac{11}{\cancel{3}_1} \times \frac{\cancel{9}^3}{2} = \frac{11}{1} \times \frac{3}{2}$

Step 3

Multiply. Write the product as a mixed number.

$\frac{11}{1} \times \frac{3}{2} = \frac{33}{2} = 16\frac{1}{2}$

$16\frac{1}{2}$ is close to 20, so the answer is reasonable.

Find each product. Simplify if possible.

1. $2\frac{3}{4} \times 3\frac{1}{2} = 9\frac{5}{8}$
2. $2\frac{1}{5} \times 2\frac{2}{3} = 5\frac{13}{15}$
3. $6 \times 3\frac{1}{4} = 19\frac{1}{2}$
4. $1\frac{2}{5} \times 3\frac{1}{4} = 4\frac{11}{20}$
5. $4\frac{1}{2} \times 16 = 72$
6. $1\frac{3}{8} \times 2\frac{1}{2} = 3\frac{7}{16}$
7. **Number Sense** Is $2 \times 17\frac{5}{6}$ greater than or less than 36? Explain.
   Less, because $2 \times 18 = 36$. $17\frac{5}{6}$ is less than 18, so the product is less than 36.

Reteaching

Name _____

Adding Mixed Numbers

R 4-5

To add mixed numbers, you can add the fractional parts to the whole number parts, and then simplify.

Find $2\frac{2}{4} + 3\frac{1}{4}$.

The fractions have a common denominator. Add the fractions. Then add the whole numbers.

$$\begin{array}{r} 2\frac{2}{4} \\ +3\frac{1}{4} \\ \hline 5\frac{3}{4} \end{array}$$

Find $3\frac{2}{3} + 4\frac{1}{9}$.

Write equivalent fractions with the LCD.

$3\frac{2}{3} = 3\frac{6}{9}$

$+4\frac{1}{9} = 4\frac{1}{9}$

Add the whole numbers. Add the fractions. Simplify if possible.

$$\begin{array}{r} 3\frac{6}{9} \\ +4\frac{1}{9} \\ \hline 7\frac{7}{9} \end{array}$$

Find $4 + 3\frac{3}{5}$.

Add the whole numbers; then add the fraction.

$$\begin{array}{r} 4 \\ +3\frac{3}{5} \\ \hline 7\frac{3}{5} \end{array}$$

Find each sum. Simplify your answer.

1. $2\frac{1}{5} + 2\frac{3}{5} = 4\frac{4}{5}$
2. $4\frac{2}{3} + 1\frac{1}{6} = 5\frac{5}{6}$
3. $5\frac{3}{5} + \frac{3}{10} = 5\frac{9}{10}$
4. $8\frac{5}{8} + 1\frac{5}{12} = 10\frac{1}{24}$
5. $6\frac{1}{4} + 11\frac{3}{8} = 17\frac{5}{8}$
6. $7 + 8\frac{1}{3} = 15\frac{1}{3}$
7. In 2001, the men's indoor pole vault record was $20\frac{1}{6}$ ft. The women's record for the indoor pole vault was $15\frac{5}{12}$ ft. What is the combined height of the two records? **$35\frac{7}{12}$ ft**
8. **Writing in Math** How high is a stack of library books if one book is $1\frac{3}{8}$ in. high, the second book is $1\frac{5}{6}$ in. high, and the third is $2\frac{1}{3}$ in. high? Explain how you solved this problem.
   $5\frac{13}{24}$ in.; You need to find the LCD to solve this problem.

23

Reteaching

Name _____

Area of Squares and Rectangles

R 10-8

You can use formulas to find the area of a square or rectangle.

Find the area of a square that is 7.2 m on each side.

Use the formula $A = s^2$.

$A = (7.2)^2$

$A = 51.84$

The area is 51.84 m^2.

Find the area of a rectangle with a length (l) of 4 cm and a width (w) of 12 cm.

Use the formula $A = l \times w$.

$A = 4 \times 12$

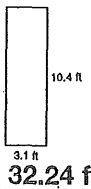
$A = 48$

The area is 48 cm^2.

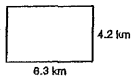
Find the area of each figure.

1. 

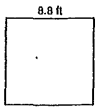
68.89 cm^2

2. 

32.24 ft^2

3. 

26.46 km^2

4. 

77.44 ft^2

5. **Reasoning** What is the length of a rectangle that has an area of 120 ft^2 and a width of 8 ft? 15 ft

6. **Number Sense** What is the area of a square that is 12.4 cm on each side? 153.76 cm^2

Reteaching

Name _____

Customary Measurement

R 10-1

Units of Length

foot (ft)	1 ft = 12 in.
yard (yd)	1 yd = 3 ft
	1 yd = 36 in.
mile (mi)	1 mi = 5,280 ft
	1 mi = 1,760 yd

Units of Capacity

cup (c)	1 c = 8 fluid ounces (oz)
pint (pt)	1 pt = 2 c
quart (qt)	1 qt = 2 pt
gallon (gal)	1 gal = 4 qt

How to change from one unit of measurement to another:

To change from larger units to smaller units in the customary system, you have to multiply.

120 yd = _____ ft

1 yd = 3 ft

120 × 3 ft = 360 ft

120 yd = 360 ft

To change from smaller units to larger ones, you have to divide.

256 oz = _____ c

1 c = 8 oz

256 ÷ 8 = 32

256 oz = 32 c

Complete.

1. 36 in. = 3 ft
2. 4 qt = 16 c
3. 5 lb = 80 oz
4. 39 ft = 13 yd
5. 1.5 mi = 7,920 ft
6. 3.5 gal = 14 qt
7. 2 T = 4,000 lb
8. 16 pt = 8 qt
9. 64 oz = 4 lb
10. 3 yd = 108 in.
11. 4 gal = 32 pt
12. 55 yd = 165 ft
13. 6.5 lb = 104 oz
14. 20 pt = 2.5 gal
15. 4.5 qt = 18 c
16. 205 yd = 615 ft

17. **Reasoning** A vendor at a festival sells soup for $1.25 per cup or $3.75 per quart. Which is the better buy?

$3.75 per quart is the better buy.

Reteaching

Name _____

Metric Measurement

R 10-2

Changing from one metric unit to another:

To change from a larger unit to a smaller unit, multiply by a power of ten.

3.8 L = _____ mL

A liter is a larger unit than a milliliter. To change from liters to milliliters, multiply.

1 L = 1,000 mL

3.8 × 1,000 = 3,800

3.8 L = 3,800 mL

To change from a smaller unit to a larger unit, divide by a power of ten.

100 m = _____ km

The meter is a smaller unit than the kilometer. To change from meters to kilometers, divide.

1,000 m = 1 km

100 ÷ 1000 = 0.1

100 m = 0.1 km

Name the most appropriate metric unit for each measurement.

1. mass of a cow: kg
2. length of a carrot: cm
3. capacity of a thimble: mL

Complete.

4. 45 g = 45,000 mg
5. 3450 mL = 3.45 L
6. 4.5 m = 4,500 mm
7. 1.68 L = 1,680 mL
8. 28 cm = 280 mm
9. 7,658 g = 7.658 kg
10. 600 cm = 6 m
11. 5,000 mg = 5 g
12. 5.1 km = 5,100 m
13. 1.780 L = 1,780 mL
14. 0.780 L = 780 mL
15. 4,300 m = 4.3 km
16. 9,000 cm = 90 m
17. 8,000 mg = 8 g

18. **Reasoning** It is recommended that people have 1 g of calcium each day. How many milligrams of calcium is that?

1,000 mg

Reteaching

Name _____

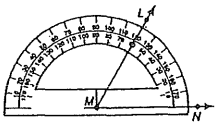
Measuring and Drawing Angles

R 9-2

How to measure an angle:

Step 1 Place the protractor's center on the angle's vertex.

Step 2 Place the 0° mark on one side of the angle.



$LMN = 60°$

Step 3 Use the scale beginning with the 0° mark to read the measurement where the other side of the angle crosses the protractor.

How to draw an angle:

Draw an angle of 52°.

Step 1 Draw a ray.

Step 2 Place the protractor's center on the endpoint. Line up the ray with the 0° mark.

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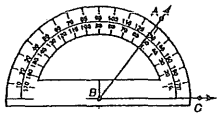
Step 4 Draw the other ray.

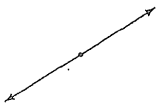


$\angle ABC = 52°$

Classify each angle as acute, right, obtuse, or straight. Then measure the angle.

1. 

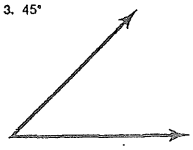
Acute; 50°

2. 

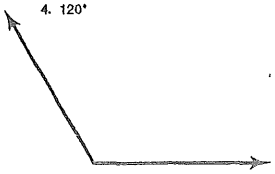
Straight; 180°

Draw an angle with each measure.

3. 45°



4. 120°



24

Reteaching

Name _____

Area of Squares and Rectangles

R 10-9

You can use formulas to find the area of a square or rectangle.

Find the area of a square that is 7.2 m on each side.

Use the formula $A = s^2$.

$A = (7.2)^2$

$A = 51.84$

The area is 51.84 m^2.

Find the area of a rectangle with a length (l) of 4 cm and a width (w) of 12 cm.

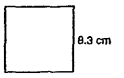
Use the formula $A = l \times w$.

$A = 4 \times 12$

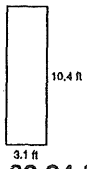
$A = 48$

The area is 48 cm^2.

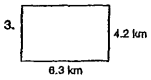
Find the area of each figure.

1. 

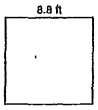
68.89 cm^2

2. 

32.24 ft^2

3. 

26.46 km^2

4. 

77.44 ft^2

5. **Reasoning** What is the length of a rectangle that has an area of 120 ft^2 and a width of 8 ft? 15 ft

6. **Number Sense** What is the area of a square that is 12.4 cm on each side? 153.76 cm^2

Reteaching

Name _____

Customary Measurement

R 10-1

Units of Length

foot (ft)	1 ft = 12 in.
yard (yd)	1 yd = 3 ft
	1 yd = 36 in.
mile (mi)	1 mi = 5,280 ft
	1 mi = 1,760 yd

Units of Capacity

cup (c)	1 c = 8 fluid ounces (oz)
pint (pt)	1 pt = 2 c
quart (qt)	1 qt = 2 pt
gallon (gal)	1 gal = 4 qt

How to change from one unit of measurement to another:

To change from larger units to smaller units in the customary system, you have to multiply.

120 yd = _____ ft

1 yd = 3 ft

120 × 3 ft = 360 ft

120 yd = 360 ft

To change from smaller units to larger ones, you have to divide.

256 oz = _____ c

1 c = 8 oz

256 ÷ 8 = 32

256 oz = 32 c

Complete.

1. 36 in. = 3 ft
2. 4 qt = 16 c
3. 5 lb = 80 oz
4. 39 ft = 13 yd
5. 1.5 mi = 7,920 ft
6. 3.5 gal = 14 qt
7. 2 T = 4,000 lb
8. 16 pt = 8 qt
9. 64 oz = 4 lb
10. 3 yd = 108 in.
11. 4 gal = 32 pt
12. 55 yd = 165 ft
13. 6.5 lb = 104 oz
14. 20 pt = 2.5 gal
15. 4.5 qt = 18 c
16. 205 yd = 615 ft

17. **Reasoning** A vendor at a festival sells soup for $1.25 per cup or $3.75 per quart. Which is the better buy?

$3.75 per quart is the better buy.

Reteaching

Name _____

Metric Measurement

R 10-2

Changing from one metric unit to another:

To change from a larger unit to a smaller unit, multiply by a power of ten.

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Reteaching

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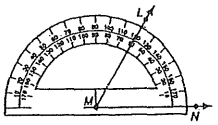

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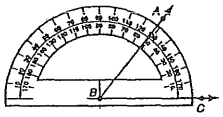

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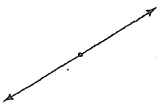
2. 

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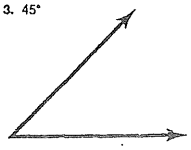
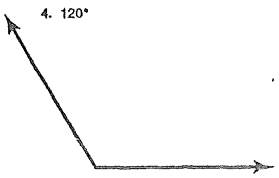


4. 120°



25

Name _____

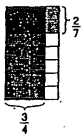
Multiplying Fractions

R 5-2

Find $\frac{3}{4} \times \frac{2}{7}$.

One Way

Draw a picture. Simplify if possible.



6 of the 28 squares have overlapping shading.

So, $\frac{3}{4} \times \frac{2}{7} = \frac{6}{28}$.

Simplify $\frac{6}{28}$ to $\frac{3}{14}$.

Another Way

Multiply the numerators and denominators. Simplify if possible.

$\frac{3}{4} \times \frac{2}{7}$

$= \frac{3 \times 2}{4 \times 7} = \frac{6}{28}$

$= \frac{3}{14}$

Simplify First

Find the GCF of any numerator and any denominator.

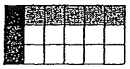
The GCF of 2 and 4 is 2. Divide 2 and 4 by the GCF.

$\frac{3}{\cancel{4}_{2}} \times \frac{\cancel{2}^{1}}{7} = \frac{3}{14}$

Write an equation for each picture.

1. 

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

2. 

$\frac{1}{6} \times \frac{1}{3} = \frac{1}{18}$

Find each product. Simplify if possible.

3. $\frac{6}{8} \times \frac{1}{3} = \frac{1}{4}$

4. $\frac{5}{6} \times \frac{7}{10} = \frac{7}{12}$

5. $\frac{4}{5} \times \frac{3}{8} = \frac{3}{10}$

6. $\frac{1}{2} \times \frac{4}{9} = \frac{2}{9}$

7. **Number Sense** Can you simplify before multiplying $14 \times \frac{25}{27}$? Explain.

No, because there is no common factor to divide by

26