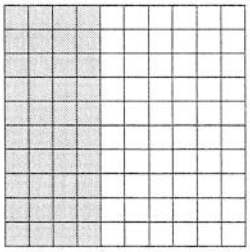
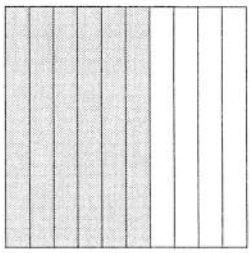
Name _____

Decimals and Fractions

R 11-1



Fraction: $\frac{40}{100}$ Decimal: 0.40



Fraction: $\frac{6}{10}$ Decimal: 0.6

Writing fractions as decimals:

Write $\frac{4}{5}$ as a decimal.

$\times 20$

$\frac{4}{5} = \frac{80}{100}$

$\times 20$

80 parts out of 100 is 0.80.

So, $\frac{4}{5} = 0.80$.

Writing decimals as fractions:

Write 0.8 as a fraction in simplest form.

0.8 is eight tenths or $\frac{8}{10}$.

$\div 2$

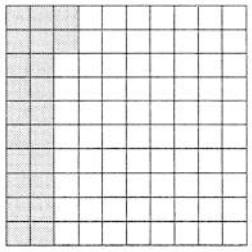
$\frac{8}{10} = \frac{4}{5}$

$\div 2$

So, $0.8 = \frac{4}{5}$.

Write a fraction and a decimal for the part of each grid that is shaded.

1.



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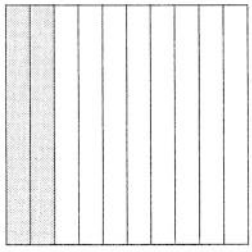
2.



_____

Write each fraction as a decimal.

3. $\frac{6}{10}$ _____ **4.** $\frac{75}{100}$ _____ **5.** $1\frac{1}{10}$ _____

Write each decimal as a fraction or a mixed number in simplest form.

6. 0.3 _____ **7.** 0.95 _____ **8.** 7.7 _____

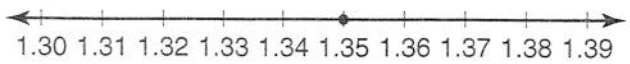
Name _____

Decimal Place Value

R 11-2

There are different ways to represent the decimal 1.35.

Number line:



Place-value chart:

Ones		Tenths	Hundredths
1	.	3	5

Expanded form: 1 + 0.3 + 0.05

Standard form: 1.35

Word form: one and thirty-five hundredths

Write each number in standard form.

1. Two and seventeen-hundredths _____

2. 80 + 7 + 0.09 _____

Write the word form and tell the value of the underlined digit for each number.

3. 4.<u>1</u>6 _____

_____

4. <u>2</u>.08 _____

_____

5. 9.9<u>4</u> _____

_____

The world's largest dog biscuit measured 2.35 m long, 577 cm wide, and 2.54 cm thick.

6. Write the thickness of the dog biscuit in expanded form.

_____

Name_____

Comparing and Ordering Decimals

R 11-3

Compare 0.87 to 0.89.

First, begin at the left. Find the first place where the numbers are different.

0.87

0.89

The numbers are the same in the tenths places, so look to the next place.

The first place where the numbers are different is the hundredths place. Compare 7 hundredths to 9 hundredths.

$0.07 < 0.09$, so $0.87 < 0.89$

Compare. Write $>$, $<$, or $=$ for each ◯.

1. 0.36 ◯ 0.76 **2.** 5.1 ◯ 5.01 **3.** 1.2 ◯ 1.20

4. 6.55 ◯ 6.6 **5.** 0.62 ◯ 0.82 **6.** 4.71 ◯ 4.17

Order the numbers from least to greatest.

7. 1.36, 1.3, 1.63

_____

8. 0.42, 3.74, 3.47

_____

9. 6.46, 6.41, 4.6

_____

10. 0.3, 0.13, 0.19, 0.31

_____

11. Number Sense Which is greater, 8.0 or 0.8? Explain.

_____

_____

_____

_____

Name _____

Rounding Decimals

R 11-4

Here is how to round decimals:

		Round 5.23 to the nearest whole number.	Round 3.67 to the nearest tenth.
Step 1	Find the rounding place.	5.23 ↑ 5 is in the ones place.	3.67 ↑ 6 is in the tenths place.
Step 2	Look at the digit to the right. If it is 5 or more, change to the next greatest digit. If it is less than 5, leave the number as it is.	5.23 ↑ Leave the number as it is because $2 < 5$. 5.23 rounds to 5.	3.67 ↑ Change 6 to 7, because $7 > 5$. 3.67 rounds to 3.7.

Round each number to the nearest whole number.

1. 27.93 _____ **2.** 0.8 _____ **3.** 7.49 _____ **4.** 63.1 _____

Round each number to the nearest tenth.

5. 63.25 _____ **6.** 0.47 _____

7. 11.14 _____ **8.** 1.92 _____

9. 33.08 _____ **10.** 27.64 _____

11. Number Sense Ashley was asked to round 79.37 to the nearest tenth. She answered 79.3. Is her answer correct? Explain.

_____

_____

_____

_____

_____

Name _____

Estimating Decimal Sums and Differences

R 11-5

To estimate, you change numbers to ones that are easier to add and subtract.

Estimate 11.7 + 3.8.

Estimate by rounding to the nearest whole number.

$$\begin{array}{ccccc} 11.7 & + & 3.8 & & \\ \downarrow & & \downarrow & & \\ 12 & + & 4 & = & 16 \end{array}$$

So, 11.7 + 3.8 is about 16.

Estimate 12.9 − 7.1.

Estimate by rounding to the nearest whole number.

$$\begin{array}{ccccc} 12.9 & - & 7.1 & & \\ \downarrow & & \downarrow & & \\ 13 & - & 7 & = & 6 \end{array}$$

So, 12.9 − 7.1 is about 6.

Estimate each sum or difference.

1. 7.12 + 8.64 _____

2. 12.74 − 6.11 _____

3. 22.91 + 4.86 _____

4. 17.4 − 12.8 _____

5. 19.8 + 7.12 _____

6. 31.22 − 18.3 _____

7. $\begin{array}{r} 9.3 \\ +\ 6.27 \\ \hline \end{array}$

8. $\begin{array}{r} 8.4 \\ -\ 3.1 \\ \hline \end{array}$

9. $\begin{array}{r} 4.13 \\ -\ 1.68 \\ \hline \end{array}$

10. $\begin{array}{r} 0.31 \\ +\ 0.74 \\ \hline \end{array}$

11. $\begin{array}{r} 24.7 \\ +\ 3.88 \\ \hline \end{array}$

12. $\begin{array}{r} 51.99 \\ +\ 11.11 \\ \hline \end{array}$

13. $\begin{array}{r} 24.24 \\ -\ 12.81 \\ \hline \end{array}$

14. $\begin{array}{r} 0.79 \\ +\ 1.88 \\ \hline \end{array}$

15. Number Sense For Exercises 1–8, which problems have an overestimate as their solution?

_____

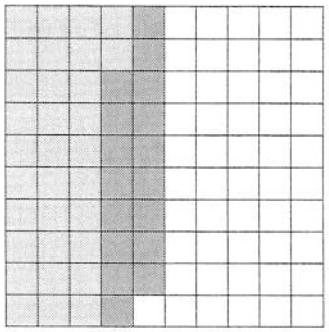
Name _____

Using Grids to Add and Subtract Decimals

R 11-6

Adding decimals using a hundredths grid:

Add 0.32 + 0.17.



Step 1: Shade 32 squares to show 0.32.

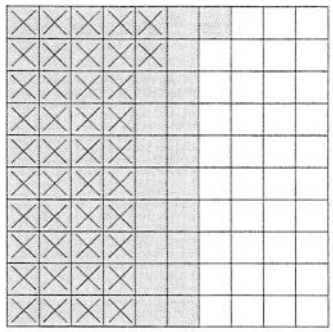
Step 2: Use a different color. Shade 17 squares to show 0.17.

Step 3: Count all the squares that are shaded. How many hundredths are shaded in all? Write the decimal for the total shaded squares: 0.49.

So, 0.32 + 0.17 = 0.49.

Subtracting decimals using a hundredths grid:

Subtract 0.61 − 0.42.



Step 1: Shade 61 squares to show 0.61.

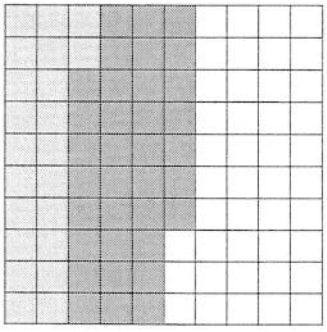
Step 2: Cross out 42 squares to show 0.42.

Step 3: Count the squares that are shaded but not crossed out. Write the decimal: 0.19.

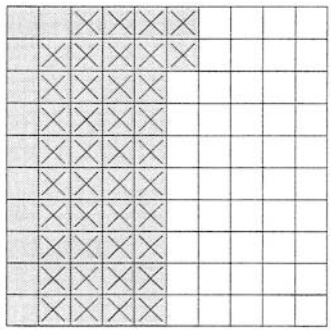
So, 0.61 − 0.42 = 0.19.

Add or subtract. You may use grids to help.

1. 0.22 + 0.35 = _____



2. 0.52 − 0.41 = _____



Name _____

Adding and Subtracting Decimals

R 11-7

Add 12.8 + 52.64.

First, estimate 13 + 53 = 66.

Step 1	Step 2	Step 3	Step 4
Line up the decimal points. Write zeros as place holders, if necessary.	Add the hundredths. Regroup if necessary.	Add the tenths. Regroup if necessary.	Add the ones, then the tens. Place the decimal point.
12.80 +52.64	12.80 +52.64 4	1 12.80 +52.64 44	1 12.80 +52.64 65.44
Remember, 12.8 = 12.80.			

The sum 65.44 is reasonable because it is close to the estimate of 66.

Subtract 68.2 − 41.05.

First, estimate 70 − 40 = 30.

Step 1	Step 2	Step 3	Step 4
Line up the decimal points. Write zeros as place holders, if necessary.	Subtract hundredths. Regroup if necessary.	Subtract tenths. Regroup if necessary.	Continue subtracting ones and tens, regrouping as necessary. Place the decimal point.
68.20 −41.05	1 10 68.~~2~~0 −41.05 5	1 10 68.~~2~~0 −41.05 15	1 10 68.~~2~~0 −41.05 27.15
Remember, 68.2 = 68.20.			

The sum 27.15 is reasonable because it is close to the estimate of 30.

1. 12.51 + 6.43

2. 5.8 + 0.65

3. 8.97 − 5.61

4. 15.8 − 12.15

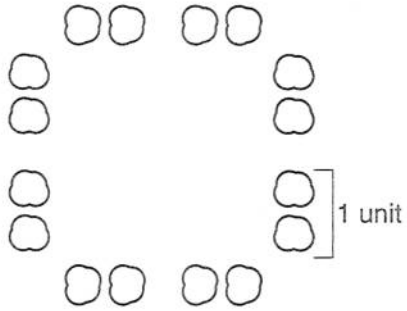
5. Estimation Estimate the sum of 35.67 and 9.51.

Name _____

PROBLEM-SOLVING STRATEGY **R 11-8**

Solve a Simpler Problem

Squares A student is making a pattern of squares out of cotton balls. Each unit on a side of the pattern is made up of 2 cotton balls. How many cotton balls will the student need to make a pattern that is 4 units high and 4 units wide?



Read and Understand

Step 1: What do you know?

There are 2 cotton balls in each unit. The square is 4 units high and 4 units wide.

Step 2: What are you trying to find?

How many cotton balls are needed in all

Plan and Solve

Step 3: What strategy will you use?

Strategy: Solve a simpler problem

Problem 1: How many cotton balls are needed for a 1-unit by 1-unit square?

8 cotton balls are needed for a 1-unit square.

Problem 2: How many cotton balls are needed for a 2-unit by 2-unit square?

16 cotton balls are needed for a 2-unit square.

There are 2 cotton balls for each unit on the side. There are always 4 sides, so the pattern is the number of units in each side, multiplied by 2 cotton balls, multiplied by 4 sides.

Answer: 32 cotton balls are needed.

Look Back and Check

Step 4: Is your work correct?

Yes, all of my computations are correct, and I saw the correct pattern.

1. Joan works for 6 hr each weekday, and 8 hr total on the weekends. She earns $6 an hour on weekdays and $9 an hour on weekends. How much money does she earn each week?

_____

Name _____

Length and Metric Units

R 11-9

Metric units are used to estimate and measure length.

Metric Units of Length

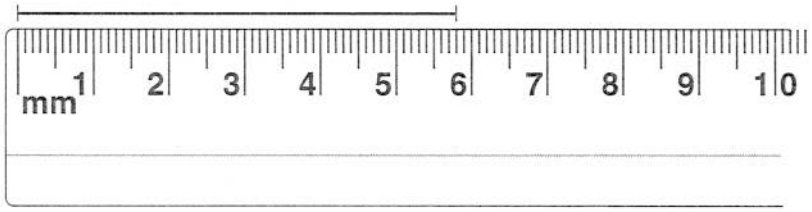
1 cm = 10 mm

1 dm = 10 cm

1 m = 100 cm

1 km = 1,000 m

Find the length to the nearest millimeter.



The line segment is 58 mm long. Measured to the nearest centimeter, the segment is 6 cm long.

Estimate first. Then find each length to the nearest centimeter.

1. _____

2. _____

Choose the most appropriate unit to measure each. Write mm, cm, dm, m, or km.

3. length of a finger _____

4. length of a football _____

5. width of a big toe _____

6. length of the lunchroom _____

7. distance between Paris and London _____

8. **Number Sense** The distance across a field is 20 m. Is the distance across the same field greater than or less than 20 km?

_____

Name _____

Capacity and Metric Units

R 11-10

Capacity is the amount of liquid that an object can hold. The metric system of measurement uses the units liter (L) and milliliter (mL).

You would use liters to measure the amount of water in a water bottle or the amount of gasoline in a gas can.

A milliliter is a very small unit of measurement. There are 5 mL of liquid in a teaspoon. You would use milliliters to measure small amounts of liquid, such as measuring how much medicine to give a baby.

1 L is the same as 1,000 mL.

Choose the most appropriate unit to use to measure the capacity of each.

1. thimble _____
2. kitchen sink _____
3. coffee cup _____
4. bucket of water for a horse _____
5. **Number Sense** A container holds 5 L of fluid. Does it hold more than or less than 5 mL of fluid?

   _____

6. Mr. Burke has a 1 L container of oil. He poured 750 mL of oil into his lawn mower. How many mL are left in the container?

   _____

7. A bottle is filled with saline solution for eyes. Is the bottle more likely to hold 15 mL of solution or 1 L of solution?

   _____

   _____

Name _____

Mass and Metric Units

R 11-11

The metric units for mass are grams (g) and kilograms (kg).

1 kg = 1,000 g

1 g = 1,000 mg

A cherry or a pen might have the mass of 1 g.

A kitten or watermelon might have the mass of 1 kg.

Choose the most appropriate unit to measure the mass of each. Write g or kg.

1. lawn mower _____
2. pumpkin _____
3. child _____
4. gold ring _____
5. robin's egg _____
6. cannonball _____
7. cement block _____
8. spool of thread _____

9. **Number Sense** Which is greater, 850 g or 1 kg?

_____

10. The mass of a certain window is 18.6 kg. What is the mass of 2 of the same windows together?

_____

_____

11. The mass of a horse is 180.82 kg. The mass of the horse's sister is 275.6 kg. How much larger is the mass of the sister than that of the first horse?

_____

_____

_____

Name _____

Changing Units and Comparing Measures

R 11-12

How to change metric units:

To change larger units to smaller units, multiply.

6 kg = □ g

Think: 1 kg = 1,000 g

6 × 1,000 = 6,000

So, 6 kg = 6,000 g.

To change smaller units to larger units, divide.

200 mm = □ cm

Think: 1 cm = 10 mm

200 ÷ 10 = 20

So, 200 mm = 20 cm.

How to compare measures:

Compare 2 m 73 cm to 285 cm.

Step 1: Change to the same units.

Think: 1 m = 100 cm

200 + 73 = 273 cm

2 m 73 cm = 273 cm

Step 2: Compare.

273 cm < 285 cm

So, 2 m 73 cm < 285 cm.

Find each missing number.

1. 32,000 g = _____ kg
2. 9 cm 3 mm = _____ mm
3. 1 m 45 cm = _____ cm

Compare. Write > or < for each.

4. 90 g ◯ 9 kg
5. 1,750 mL ◯ 2 L
6. 12 m 6 cm ◯ 126 cm
7. **Number Sense** How many meters are in 13 km? _____

Name _____

PROBLEM-SOLVING SKILL **R 11-13**

Writing to Explain

Airplanes The Paper Airplane Club at school was having a contest to see whose paper airplane could fly the farthest. Before the contest started, students were allowed two practice flights to test their planes. The results are shown at the right.

Student	Flight 1	Flight 2
Cheryl	3 m	2 m 10 cm
Kenya	6 m 3 cm	7 m
Mario	36 cm	1 m 5 cm

Use the data in the table to predict who will win the contest.

Writing a Math Explanation

- Make sure your prediction is stated clearly.
- Use steps to make your explanation clear.
- Show and explain carefully how you used the numbers to make your prediction.

Example

I think Kenya will win. Here is why.

1. I looked at the results of the two test flights. Her plane flew over 6 m both times.
2. Cheryl's and Mario's planes both flew much less each flight. Mario's plane barely flew more than 1 m.
3. When they fly their planes in the contest, Kenya's plane will likely fly around 6 m and the other planes will fly less than that, so Kenya's plane should win.

1. The softball league is going to have a playoff. All 4 teams are included. During the season, each team played 30 games. Team A won 17 games, Team B won 29, Team C won 16, and Team D won 7. Predict which team will win the championship. Tell why.

_____

_____

_____

Name _____

Temperature

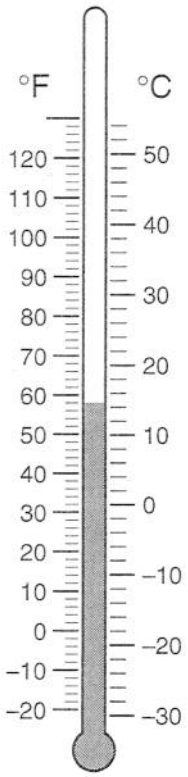
R 11-14

Thermometers are used to measure the temperature. Often thermometers will have both the degrees Celsius (°C) and the degrees Fahrenheit (°F) scales on them.

Reading a thermometer:

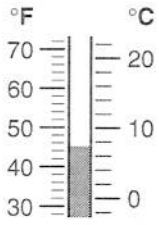
The scale on the right side of the thermometer is the Celsius scale. The temperature is about 15°C.

The scale on the left side of the thermometer is the Fahrenheit scale. The temperature is about 58°F.



Read each thermometer. Write the temperature in °C and in °F.

1.



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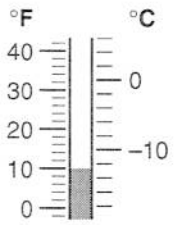
2.



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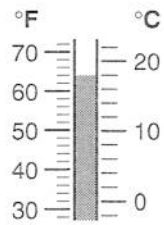
3.



_____

4. Number Sense Are you more likely to ice skate on a lake when the temperature outside is 30°C or 30°F? Explain.

_____

_____

_____

_____

Name _____

PROBLEM-SOLVING APPLICATION **R 11-15**

Shark!

About how long is a basking shark to the nearest whole meter?

First find the rounding place.

12.3

2 is in the ones place.

Then look at the digit to the right.

12.3

$3 < 5$, so leave the number as it is.

So, the basking shark is about 12 m long.

Sharks

Shark	Length (meters)
Whale shark	15 m
Basking shark	12.3 m
Great white shark	6.4 m
Piked dogfish shark	1.6 m
Spined pygmy shark	21 cm
Pygmy ribbontail cat shark	16 cm

Use the chart above to solve each problem.

1. How many centimeters longer is the great white shark than the spined pygmy shark? _____

2. How many millimeters longer is the spined pygmy shark than the pygmy ribbontail cat shark? _____

3. Write the length of the whale shark in centimeters and millimeters.

_____

4. The piked dogfish shark is the most common shark. Is the piked dogfish shark more likely to weigh 200 kg or 200 g? _____

5. If 2 great white sharks were placed end to end, what would their total length be? _____