

**MAKING THE CONNECTION:
HELPING STRUGGLING STUDENTS ACHIEVE**

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Making the Connection:
Helping struggling students achieve
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Topic	Skills	Concepts

In the space below identify a topic with which your students struggle.

Topic: _____

Misconceptions

Needed Conceptual Understandings

(If a student really understood _____,
they would understand...)

Intervention Plan – Conceptual Focus

What do they really need to UNDERSTAND?

- Question to find out what they know
- Listen to what they say versus what we hope to hear
- Pursue depth of understanding—MAKE CONNECTIONS

What are common misconceptions?

- Plan for them/Assess them
e.g. Measurements with a ruler
- What prior experiences led to the misconceptions?
e.g. Calendar routines
- Build consistencies

How far back?

- Meet them where they are
- What grade level objectives are not dependent on prior work?

What are key visual models?

e.g. Dominoes, Ten Frames, Hundred Charts

Plan to bridge to grade level using similar models

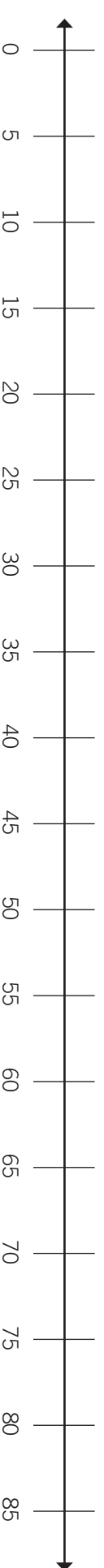
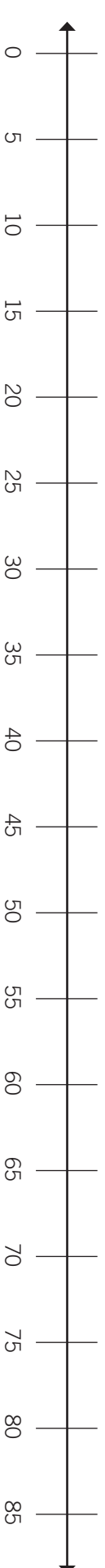
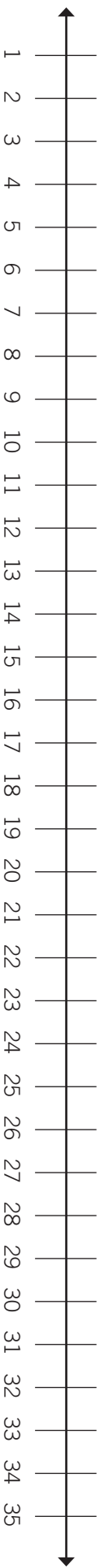
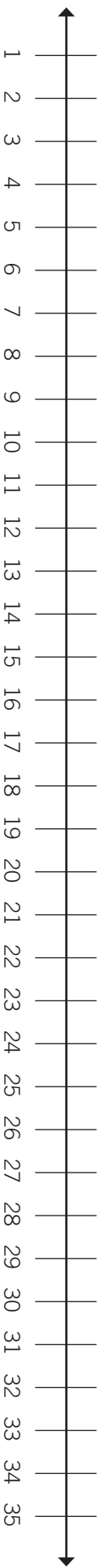
- tens frames
- hundreds charts

Purposeful use of material/models

- Links
- Place Value Charts
- Number Mats
- Tens Frame
- Hundreds Chart

Intervention Protocols

- Build concepts
- Use visual models
- Link visual to symbolic
- Develop fluency through fun, meaningful practice
- Encourage independence as well as cooperation
- Spiral
 - Revisit
 - Expand



Compensation

Up or Down

Materials: Each group of 2 or 3 players will need

- An 'Up or Down' game board
- Two (2) number cubes made from blank wooden cubes. One cube should show the numerals 92, 82, 72, 62, 52, and 42. The other cube should show 17, 27, 37, 17, 27, and 37.

Each player will need

- Fifteen (15) counters (a different color for each player).

How to play:

The aim is to arrange three counters adjacently in a horizontal, vertical, or diagonal line.

- The first player rolls the number cubes.
- The player says the subtraction sentence represented by the cubes, then figures out and says an equivalent subtraction sentence.
- The player states the difference before claiming a corresponding space on the game board by covering it with a counter. If both choices are unavailable, the player misses a turn.
- The other player(s) has a turn.
- The first player to make a line of three adjacent counters is the winner.

Questions to ask:

When to use in the curriculum:

Modifications:

Additional notes:

Compensation

Up or Down

90 - 15	95 - 20	90 - 25	95 - 30	90 - 35
80 - 15	85 - 20	80 - 25	85 - 30	80 - 35
70 - 15	75 - 20	70 - 25	75 - 30	70 - 35
60 - 15	65 - 20	60 - 25	65 - 30	60 - 35
50 - 15	55 - 20	50 - 25	55 - 30	50 - 35
40 - 15	45 - 20	40 - 25	45 - 30	40 - 35

Compensation

Up or Down Again

75	75	65	65	55	55
65	65	55	55	45	45
55	55	45	45	35	35
45	45	35	35	25	25
35	35	25	25	15	15
25	25	15	15	5	5

Compensation

What strategy did you use to solve $500 - 327$ on page 3?

What if a child knows that

$$\begin{array}{r} 500 \\ - 327 \\ \hline \end{array} \text{ is the same as } \begin{array}{r} 499 \\ - 326 \\ \hline \end{array}$$

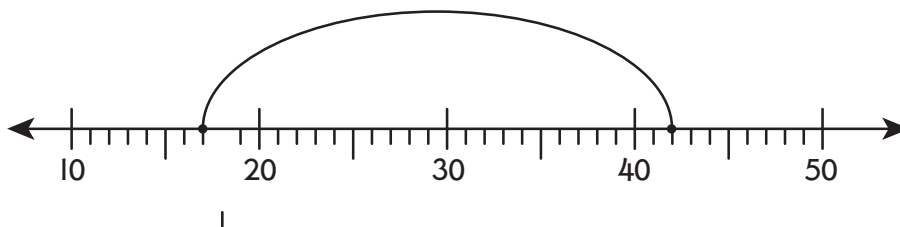
Use this strategy to solve the following problems.

1.
$$\begin{array}{r} 700 \\ - 182 \\ \hline \end{array}$$

2.
$$\begin{array}{r} 1000 \\ - 548 \\ \hline \end{array}$$

3.
$$\begin{array}{r} 601 \\ - 433 \\ \hline \end{array}$$

4.
$$\begin{array}{r} 4002 \\ - 875 \\ \hline \end{array}$$



Compensation

6

Look at this subtraction example.

$$67 - 22$$

Which of these examples have the **same answer**?

- a. $67 - 2 - 20$
- b. $70 - 25$
- c. $60 - 7 - 20 - 2$
- d. $65 - 20$

Computation and Number Sense

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Grade 4



Green Tank

Burnett, J. (2005). *The Think Tank. Green Level*. San Ramon, CA: ORIGO Publications.

9

Write $<$ (is less than), $=$ (is equal to), or $>$ (is greater than) to make each of these true.

- a. $89 - 37$ ____ $80 - 30 - 2$
- b. $253 - 118$ ____ $255 - 120$
- c. $\$20 - \12.49 ____ $\$20 - \$12 + 49\text{c}$
- d. $500 - 365$ ____ $499 - 364$
- e. $3.4 - 2.8$ ____ $2.8 - 3.4$

Computation and Number Sense

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Grade 5



Red Tank

Burnett, J. (2005). *The Think Tank. Red Level*. San Ramon, CA: ORIGO Publications.

Compensation

Grade 6

7

- a. Figure out the answer **in your head**.

$$5,600 - 1,900 = \underline{\hspace{2cm}}$$

- b. Write about the strategy you used.
c. Write **four** other number sentences that you could solve the same way.



Computation and Number Sense

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Blue Tank

Burnett, J. (2005). *The Think Tank. Blue Level*. San Ramon, CA: ORIGO Publications.

Briefly describe the ways in which the compensation strategy can be used to solve these problems.

When could you use these in your current curriculum?

Modifications:

Additional notes:

Concrete Representations

Visual/Pictorial Representations

Topic

Verbal Representations

Symbolic Representations

In the space below identify a topic with which your students struggle.

Topic: _____

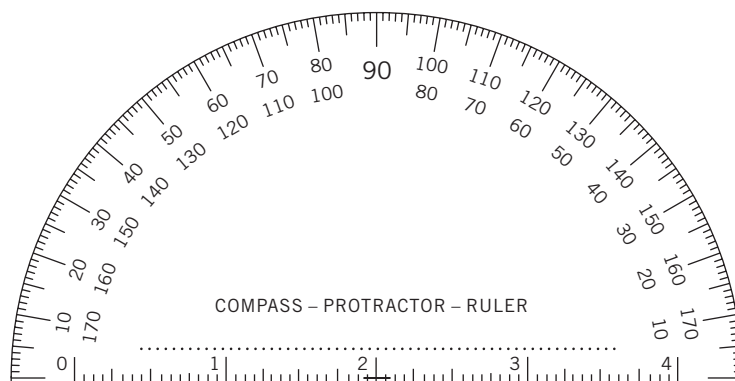
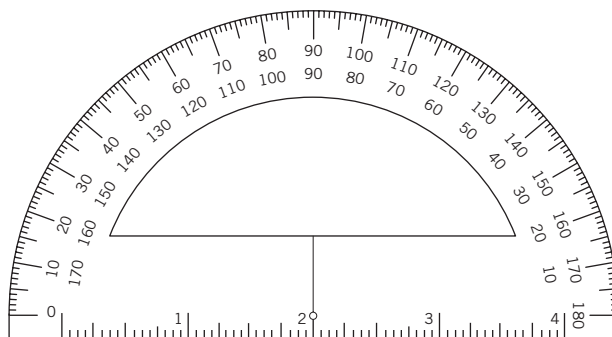
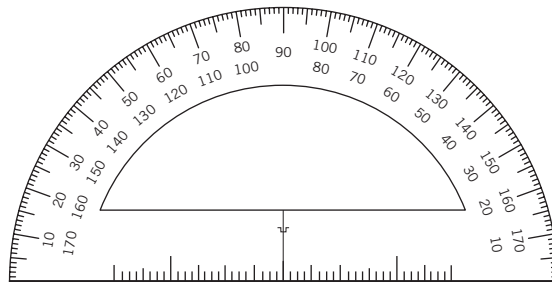
Identify the benefits and limitations of various representations used to teach the identified topic.

Benefits	Limitations
Concrete Representations	Concrete Representations
Visual/Pictorial Representations	Visual/Pictorial Representations
Verbal Representations	Verbal Representations
Symbolic Representations	Symbolic Representations

Protractor Use

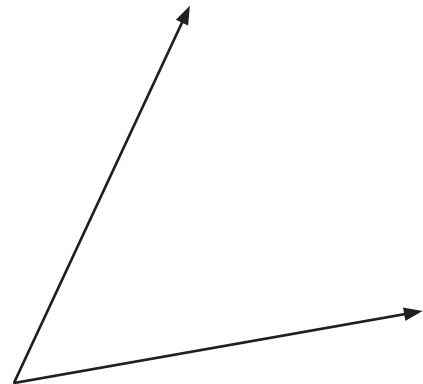
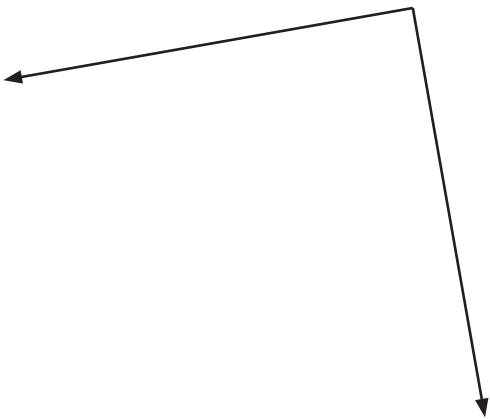
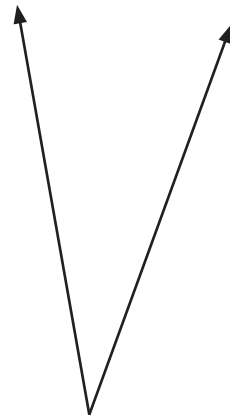
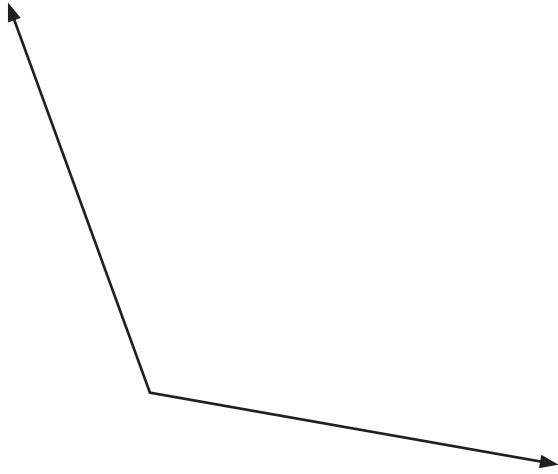
Using rulers accurately to measure line segments is a surprisingly difficult task. Students have difficulty determining the “inch side” from the “centimeter side” of the ruler. They obtain inaccurate measurements because they always start at the end of the ruler, ignoring the location of “zero”. They may even think that the length of an object changes as the object moves across the ruler. That is, they may think that a four inch object becomes five inches when placed at the one inch mark, or six inches when placed at the two inch mark.

Students have similar difficulties in using a protractor accurately. As seen below, the location of zero and the vertex point varies. Students are not sure as to which scale to read, the “top” or the “bottom.” Focusing on the units of measure (degrees), the increments of measure (10 degrees), and the vertex point can alleviate these common difficulties.



Protractor Use

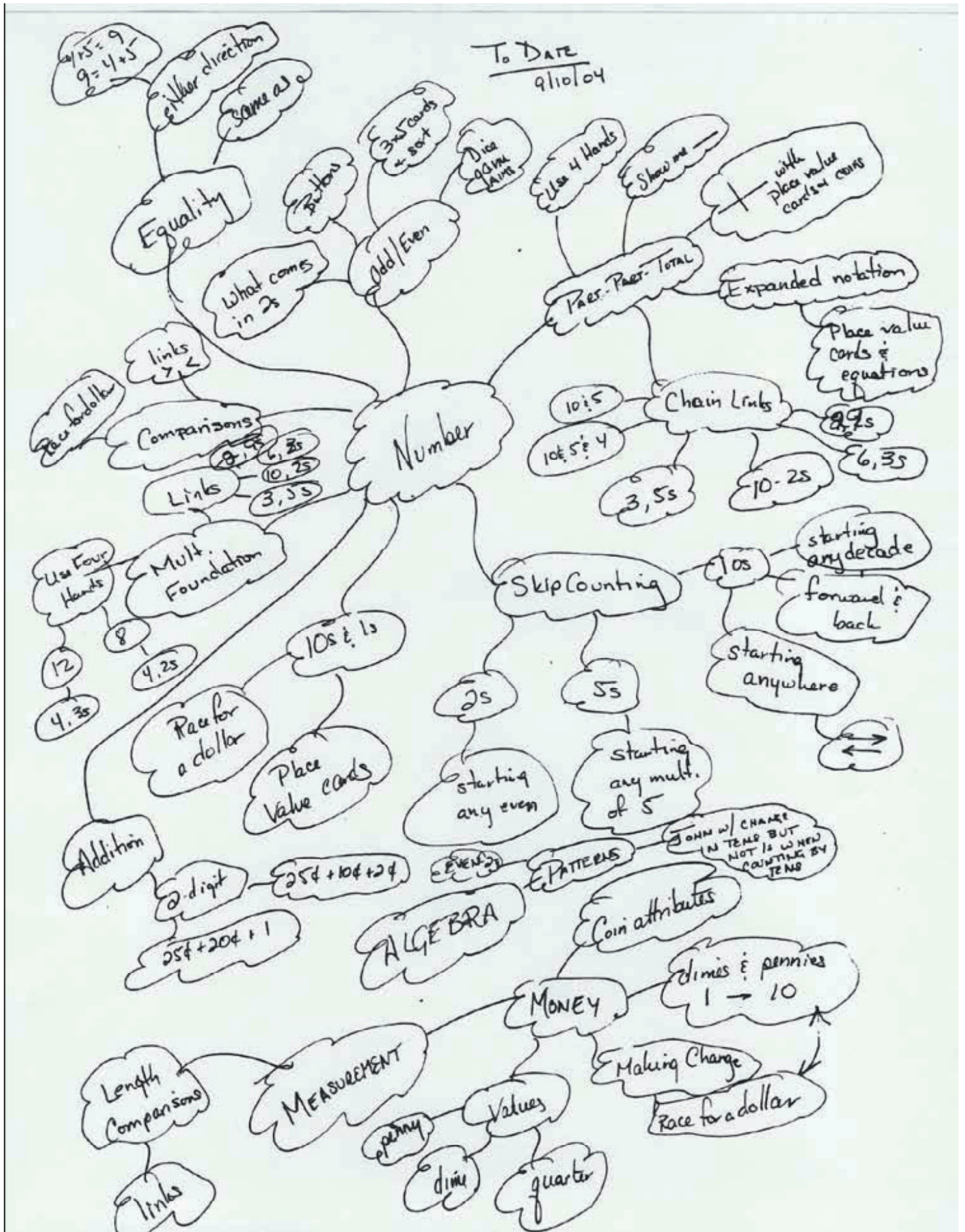
Using a protractor find the measure of each angle.



Classroom Protocols

- Allow for mistakes—Don't panic!
- Ask versus tell (whenever possible)
- Think-pair-share
 - Tell me what your partner said.
- Students always explain thinking.
- Ask questions to determine understandings.
- Teach to build connections.

To DATE
9/10/04



Sample Quiz

1. $9 + 4 = \underline{\quad} + 2$

2. $2 + \underline{\quad} = 10 + 5$

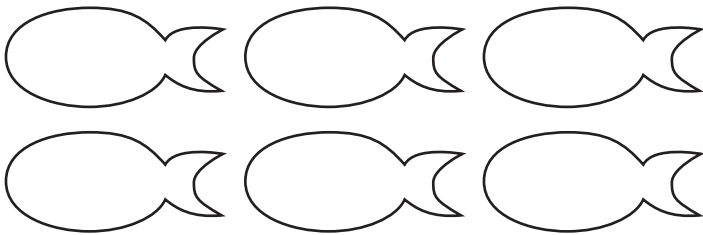
3. $20 + 17 = \underline{\quad} + 3$

4. What time is it? (7:15)

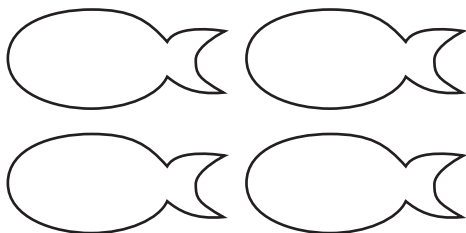
5. What time will it be in $\frac{1}{2}$ hour?

6. Color in $\frac{1}{4}$.

7. Show $\frac{5}{6}$.



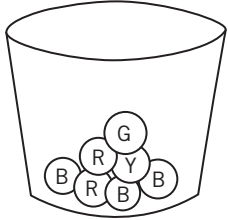
8. Color in $\frac{1}{2}$.



9. Held up a gram cube— How much does it weigh?
How long is the side?

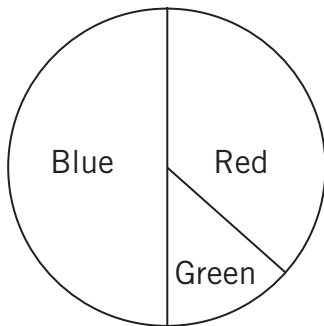
Sample Quiz

1. What color will you most likely pull out?



2. Name a color that is impossible to get.

3. What color are you most likely to land on?



4. What color are you least likely to land on?

5. What color is impossible to land on?

6. Draw a picture for 214.

7. Draw a picture for 305.

8. Draw a picture for $\frac{1}{2}$.

9. Write 3617 in expanded form.

10. Write 54,268 in expanded form.