

Measurement and Data Tasks and Answer Key

Website: <http://alex.state.al.us/ccrs/node/314>

Name: _____ Date: _____

Task 1 – Standard #19

Measuring the Jump Ropes

There are some jump ropes in a container in the gym. The students need to sort them by length.

Sally picks all the ropes that are shorter than 40 inches.

Mary picks all the ropes between 41 and 50 inches long.

Tanya picks all the ropes that are between 51 and 62 inches long.

Jose picks all the ropes that are between 63 and 74 inches long.

Lebron picks all the ropes that are longer than 75 inches.

Part 1: Based on the data below, how many jump ropes does each person pick up?

3 ft	2 ft	5 ft	4 ft	4 ft	3 ft	5 ft
7 ft	6 ft	6 ft	6 ft	3 ft	5 ft	4 ft

Part 2: Another bin is found. After students add the ropes below to their pile, how many do they each have?

6 ft 2 in	4 ft 3 in	2 ft 11 in	3 ft 4 in	3 ft 5 in	3 ft 11 in	6 ft 8 in
5 ft 11 in	5 ft 2 in	5 ft 3 in	3 ft 1 in	2 ft 3 in	3 ft 6 in	4 ft 2 in

Part 3: Describe how you solved the tasks in Part Two.

Name: _____ Date: _____

Task 2 – Standard #19

Shipping Packages

Four friends are each sending packages . Use the table below to answer the following questions:

Package	Weight
Sarah's box	25 and $\frac{6}{8}$ pounds
Karen's box	24 and $\frac{5}{8}$ pounds
Tim's box	29 and $\frac{7}{8}$ pounds
Steve's box	24 and $\frac{2}{8}$ pounds

Part 1:

What is the weight of each person's box in ounces?

Part 2:

What is the combined weight of each person's box in pounds?

What is the combined weight of each person's box in ounces?

Part 3:

Boxes cost a flat rate of \$10 if they are between 300 and 400 ounces, and \$15 if they are between 400 and 500 ounces. How much does each package cost?

Part 4:

If Sarah has 3 boxes that weigh the same amount and Steve has 4 boxes that weigh the same amount, how much do all of those boxes weigh in pounds? How much do all of the boxes weigh in ounces? Write a sentence explaining how you found your answer.

Name: _____ Date: _____

Task 3 – Standard #20

Getting Ready for School

The bus comes to Steve's house at 8:15 a.m. Prior to getting on the bus, he needs to:

Eat breakfast: 15 minutes

Shower: 8 minutes

Get dressed: 7 minutes

Read a book: 12 minutes

Part 1:

What is the latest that Steve can get up and still be on time for the bus?

Part 2:

It takes Steve's sister, Rachel, twice as long to get dressed and 5 minutes longer to eat breakfast. What is the latest Rachel can get up and still be on time for the bus? Write a sentence to explain how you found your answer.

Name: _____ Date: _____

Task 4 – Standard #20

Adding Up and Comparing Our Jumps

At school three students are have a jumping competition to see who can jump the farthest.

Part 1:

Nancy jumped 3 feet and 11 inches. Miguel jumped 5 inches longer than Nancy.
Sarah jumped 9 inches longer than Miguel.

How long did each person jump in feet and inches (e.g., 4 feet and 3 inches)?

How long did each person jump in only inches?

Part 2:

Write a sentence describing how you found the distances that each person jumped in inches.

Part 3:

What was the combined length that all three students jumped in inches?

What was their distance in feet and inches?

Part 4:

Three other students jumped a combined distance of 15 feet. How much further did they jump compared to the combined distance of Nancy, Miguel, and Sarah?

Name: _____ Date: _____

Task 5 – Standard #21

Area & Perimeter Exploration

Activity 1:

- Create all the possible arrays with an area of 36 square units.
- Draw them on grid paper and label their dimensions.
- How can you be sure that you found all the possible arrays with an area of 36 square units?
- Find the perimeter for each figure.
- What do you notice about the shapes and their perimeters?
- What is the relationship between the perimeter and the shape of an array?

Activity 2:

- Create all the possible arrays with a perimeter of 36 units.
- Draw your arrays on grid paper and label their dimensions.
- Use a chart to keep track of the area and dimensions for each rectangle.
- How can you be sure that you found all the possible arrays with a perimeter of 36 units? What do you notice about the shapes and their perimeters?
- What is the relationship between the area and the shape of an array?

Activity 3:

- What generalizations can be made about the relationship between the area and perimeter of a figure?
- How could this information be used to solve a problem in real life? When might it be useful to have this information?

Name: _____ Date: _____

Task 6 – Standard #21

Making a Dog Pen

Part 1:

You want to make a rectangular dog pen using 20 yards of fencing. The side lengths must be in whole yards. Create as many different rectangular pens as you can.

Part 2:

Which dog pen gives your dog the most space to run around and play in? Write a sentence explaining how you know.

Part 3:

You want to build the rectangular dog pen with 20 yards of fencing against your house which is 20 yards wide. Which dimensions will give you the most space for your dog?

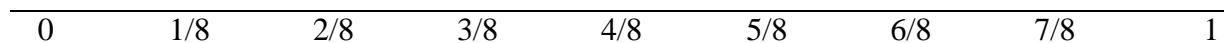
Name: _____ Date: _____

Task 7 – Standard #22

How High Did it Bounce?

A class measures how high a bouncy ball will bounce compared to the height of the wall. Based on the data, make a line plot to display the data.

$\frac{3}{8}$	$\frac{5}{8}$	$\frac{7}{8}$	$\frac{6}{8}$	$\frac{5}{8}$	$\frac{6}{8}$
$\frac{6}{8}$	$\frac{5}{8}$	$\frac{4}{8}$	$\frac{4}{8}$	$\frac{2}{8}$	$\frac{6}{8}$
$\frac{5}{8}$	$\frac{7}{8}$	$\frac{5}{8}$	$\frac{6}{8}$	$\frac{4}{8}$	$\frac{5}{8}$



- A) How many bouncy balls went halfway up the wall or higher?
- B) How many bouncy balls went $\frac{3}{4}$ of the wall or higher?
- C) If the wall is 8 feet high, what is the combined height of all of the heights of the bouncy balls?

Name: _____ Date: _____

Task 8 – Standard #25

Adding Up Angles

A 90 degree angle is divided into two smaller angles.

Part 1:

What type of angles are both of the smaller angles? How do you know?

Part 2:

Give 3 possible combinations for the measurements of both angles. For each, draw the angles and write the angle measure.

Answer Key

Task 1: Measuring the Jump Ropes

Standard #19

Have students record measurement equivalents in a two-column table. *For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...*

Solution:

Part 1:

Sally: 4 ropes, Mary: 3 ropes, Tanya: 3 ropes, Jose: 2 ropes, Lebron: 1 rope.

Part 2:

Sally: 4 ropes. Mary: 4 ropes, Tanya: 2 ropes, Jose: 3 ropes, Lebron: 1 rope.

Part 3:

Student discusses multiplying the number of feet by 12 and adding the number of inches.

Task 2: Shipping Packages

Standard #19

Have students record measurement equivalents in a two-column table. *For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...*

Solution:

Part 1:

Sarah: 412 ounces; Karen: 394 ounces; Tim: 478 ounces; Steve: 388 ounces

Part 2:

104 and $\frac{4}{8}$ pounds; 1,672 ounces

Part 3:

Karen and Steve will have to pay \$10. Sarah and Tim will have to pay \$15

Part 4:

Sarah's 3 boxes would weigh 77 and $\frac{1}{4}$ pounds. Tim's 4 boxes would weigh 119 and $\frac{2}{4}$ pounds. The combined weight would be 196 and $\frac{3}{4}$ pounds

Task 3: Getting Ready for School
Standard #20

Solution:

Part 1:

Steve needs to be up by 7:33 a.m.

Part 2:

Rachel needs to be up by 7:21 a.m.

AND

The Explanation is clear and accurate.

Task 4: Adding Up and Comparing Our Jumps
Standard #20

Solution:

Part 1:

Nancy: 3 ft, 11 in or 47 in; Miguel: 4 ft, 4 in or 52 in; Sarah: 5 ft, 1 in or 61 in.

Part 2:

The sentence contains a logical and accurate description.

Part 3:

Part 3: 160 inches or 13 ft 4 in.

Part 4:

The other students jumped 1 ft and 8 inches further.

Task 5: Area & Perimeter Exploration

Standard #21

Possible Solution:

Activity 1: All have area of 36 square units.

Perimeter	dimensions
74 units	1 x 36
40 units	2 x 18
30 units	3 x 12
26 units	4 x 9
24 units	6 x 6

Possible conclusions: The closer a shape gets to being a square, the smaller its perimeter.

Activity 2: All have a perimeter of 36 units.

Area	dimensions
17	1 x 17
32	2 x 16
45	3 x 15
56	4 x 14
65	5 x 13
72	6 x 12
77	7 x 11
80	8 x 10
81	9 x 9

Possible response: The closer a shape gets to being a square, the larger its area.

Squares have the largest possible area and the smallest possible perimeter.

The student is able to find all the possible arrays, areas, and perimeters for Activity 1 and Activity 2. They are able to make generalizations about the relationship between area and perimeters of squares and rectangles, and to generate at least one example of how this relationship might be useful in solving a real world problem.

Task 6: Making a Dog Pen

Standard #21

Part 1:

The dimensions must add up to 10. 9×1 , 8×2 , 7×3 , 6×4 , 5×5 .

Part 2:

The 5×5 pen gives the most space, 25 square yards. AND the explanation is clear and accurate.

Part 3:

The 10×5 rectangle gives the most space. The 10 yard side runs parallel to the house while the 5 yard sides connect the house to the other side.

Task 7: How High Did it Bounce?

Standard #22

Solutions:

A) 16 balls

B) 7 balls

C) 11 and $\frac{3}{8}$ of the wall or 91 feet high.

Task 8: Adding Up Angles

Standard #25

Solutions:

Part 1:

Both angles have to be acute angles since the sum of both is 90 degrees.

Part 2:

The sum of both angles has to be 90 degrees for all 3 answers AND the drawings are close to the angle measure.