

## ESTIMATION ZONE

### Performance Standard 7B.F

Estimate distance, weight, temperature, and elapsed time using reasonable units and will determine level accuracy by measuring using appropriate tool.

- *Mathematical knowledge*: Estimate and measure distance, weight, temperature and time;
- *Strategic knowledge*: Use appropriate tools;
- *Explanation*: Explain completely what was done and why it was done.

### Procedures

1. ***In order to estimate measurements and determine acceptable levels of accuracy (7B)***, students should experience sufficient learning opportunities to develop the following:
  - Estimate distance, weight, temperature and elapsed time using reasonable units and acceptable levels of accuracy.
2. Distribute “Measurement Assessment” sheet.
3. Tell the students that the estimates and the units used in each estimate must be completed first.
4. Students must then write a justification for the estimate and the unit of measure s/he used.
5. The last step is the actual measuring. The measuring does not have to be completed in the order they are listed. It would be better if some were weighing the paper while others melting M&Ms.
6. Appropriate units must be used, i.e., feet, inches, yards, meters, or centimeters for distance; pounds, ounces, grams or kilograms for weight; degrees Fahrenheit or Celsius for temperature; minutes or seconds for time.
7. Estimates need to be within a  $\pm \frac{1}{2}$  to 2 units of whatever unit is used. If a student decides to estimate the weight of the paper in ounces, s/he must be within  $\pm \frac{1}{2}$  ounce. A better unit would be pounds because the student is more likely to estimate within  $\pm \frac{1}{2}$  pound.
8. Each justification should include why a specific unit was chosen and how the student decided on the estimate.
9. Appropriate tools should be chosen for measuring (e.g., yardstick or meter stick for distance, scale for weight)
10. The teacher will have measured the distance, weight, temperature, and elapsed time to determine each student’s accuracy in measurement.

### Examples of Student Work not available

#### Time Requirements

- One class period

#### Resources

- Copies of the Measurement Assessment” task sheet
- Yardsticks or meter sticks
- Several reams of paper
- Scale
- Thermometers
- Soda pop (chilled or warm)
- Cups
- M&Ms
- Clock with a second hand or stop watches
- Mathematics Rubric

NAME \_\_\_\_\_ DATE \_\_\_\_\_

## MEASUREMENT ASSESSMENT

### Student Task Sheet

Your school is having a Family Math Night. You have just entered your classroom to find it changed into the “Estimation Zone”. In order to win a prize you must reasonably estimate the following:

- the distance from the door to the estimation station (within  $\pm 1$  unit)
- the weight of a ream of paper (within  $\pm \frac{1}{2}$  unit)
- the temperature of the soda pop in the cup on the table (within  $\pm 2$  units)
- the amount of time it will take for one M&M to melt in your hand (within  $\pm \frac{1}{2}$  unit)

1. Complete the chart below with your estimates and appropriate units of measure.
2. Write a justification for your estimate and the unit you used.
3. Write the name of the tool you will use to measure each item.
4. Measure and write what you determine to be the actual measure of each.

	Unit of Measure	Estimate	Justification for Estimate and Unit and Tool You Will Use To Measure	Actual Measure	Was your estimate within the limit allowed?
<b>Distance from door to “Estimation Station”</b>					$\pm 1$ unit Yes No
<b>Weight of a ream of copy paper</b>					$\pm \frac{1}{2}$ unit Yes No
<b>Temperature of the soda pop in a cup</b>					$\pm 2$ units Yes No
<b>Time it takes for one M&amp;M to melt in your hand</b>					$\pm \frac{1}{2}$ unit Yes No