

# Identifying, Creating and Using Quality Assessment Items

SMECC Fall 2013

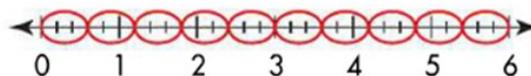
Analyze the four assessment items below by answering the following questions:

- Does it meet the rigor (conceptual understanding, procedural skill, application) expected in the core?
- Are there any bias issues?
- Should it be edited or thrown out?
- Does it meet the expectation for the given standard?

This is an assessment item from the Pearson enVision Math Common Core online edition.

Standard 6NS1: Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem

1. Raven is making pillows. Each pillow requires  $\frac{3}{5}$  of a yard of fabric. If Raven has 6 yards of fabric, use the model to find  $6 \div \frac{3}{5}$ , the number of pillows Raven can make. (9-1)



- A 10 pillows
- B 6 pillows
- C 5 pillows
- D 3 pillows

This is an assessment item for the same standard (6NS1) written by Utah teachers Peggy Feld and Helen Gurr during the core academy in 2010.

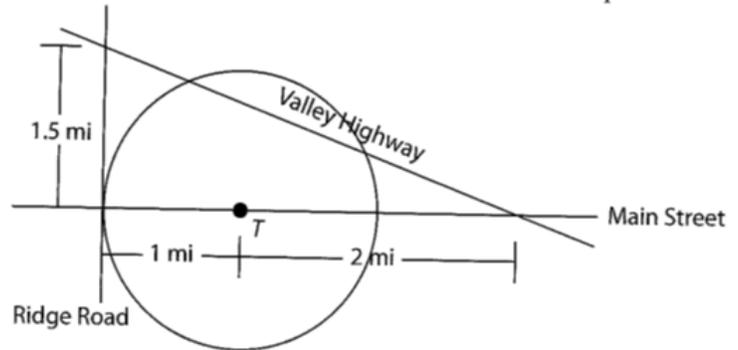
Standard 6NS1: See above

Robin makes wooden bird feeders and houses. How many feeders can Robin make from an 8 foot board if 1 feeder takes  $2\frac{1}{2}$  feet? How many wren houses can she make if each house takes  $3\frac{1}{3}$  feet? Show your work using a diagram as well as numerical representation.

This is an assessment item from the Mathematics II – Integrated Pathway from Walch Education.

Standard A-REI-7: Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically. For example, find the points of intersection between the line  $y = -3x$  and the circle  $x^2 + y^2 = 3$ .

15. A town hall is located at point  $T$  on Main Street, shown in the diagram below. The town's building regulations state that all new construction within 1 mile of the town hall must conform to a historic building code. A developer wants to know how much of Valley Highway must conform to the code. Complete parts a–d to determine what the developer wants to know.



- Set up a coordinate system with  $T$  at the origin. Use the given dimensions to write coordinates at all points where roads intersect. What does the circle on the diagram represent?
- If the equation of the circle is given by  $x^2 + y^2 = 1$ , what is the second equation of the system?
- Solve the system. Show your work.
- Determine the length of the portion of Valley Highway that must conform to the code. Use the distance formula,  $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$ .

This is an assessment item from a task written by Renee Seegmiller, a Utah teacher, for a collaboration with the School Improvement Network.

Standard A-REI-7: See above

Two very special cars have been developed. Steady Car, with the push of a button, can instantly go from 0 to 1 mile per minute and will continue to travel at a constant speed of 1 mile per minute until the button is pushed, releasing this feature. Variable Car, with the push of a button, travels a distance in miles that equals the square of the number of minutes traveled divided by 60 until the button is pushed, releasing this feature.

In a race of 30 miles, assuming that both cars start at the same time, at the same place, and that both cars engage their special buttons at the same moment, which car would you want to have? Justify your solution with multiple representations.

In a race of 90 miles, assuming that both cars start at the same time, at the same place, and that both cars engage their special buttons at the same moment, which car would you want to have?

At what point will the cars have traveled the same distance? Justify your solution with multiple representations.