Today's Plan:

Learning Target (standard): I will solve real-world variation problems.

Students will: Complete practice problems over previous concepts at the boards, put up homework problems on the board and make necessary corrections to their own work, take notes over new material and complete practice problems over new concepts.

Teacher will: Provide practice problems over previous concepts, check homework problems for accuracy and provide students feedback, describe and provide examples of new concepts and assign students assessment problems over new concepts.

Assessment: Board work, homework check and homework assignment

Differentiation: Students will work at the board, go over and correct homework at their seats, actively engage in lecture over new concepts, practice new concepts with the aid of other students and the teacher and complete homework assignment.

p.413 #2-10 even

$2) b = 9900 bushels$

$4) f = 12.5 lb$

$6) p = 2.25 s$

$8) s = 201.7\ ft$

$10) n = 60 items$

The distance (s) a ball will roll down an inclined plane is directly proportional to the square of the time (t). If the ball rolls 5 feet in one second, how far will it roll in 4 seconds?

① $s = kt^2$

$5 = k(1)^2$

$k = 5$

② $s = 5t^2$

③ $s = 5(4)^2$

$s = 5(16)$

$s = 80$ ft

The pressure (p) in a liquid varies directly as a product of the depth (d) and the density (D) of the liquid. If the pressure is 37.5 lb/in^2 when the depth is 100 inches and the density is 1.2, find the pressure when the density remains the same and the depth is 60 inches.

① $p = kdD$

$37.5 = k(100)(1.2)$

$37.5 = 120k$

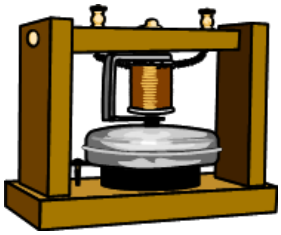
$k = 0.3125$

② $p = 0.3125dD$

③ $p = 0.3125(60)(1.2)$

$p = 22.5$ lb/in^2

The resistance (R) of a wire varies directly as the length (L) of the wire and inversely as the square of the diameter (d). If the resistance is 9 ohms in 50 feet of wire that has a diameter of 0.05 inches, find the resistance in 50 feet of a similar wire that has a diameter of 0.02 inches.



① $R = \frac{kL}{d^2}$

② $R = \frac{0.00045L}{d^2}$

$9 = \frac{k(50)}{(0.05)^2}$

③ $R = \frac{0.00045(50)}{(0.02)^2}$

$9 = \frac{50k}{0.0025}$

$= \frac{0.0225}{0.0004}$

$0.0225 = 50k$

$R = 56.25$ ohms

$k = 0.00045$

Finding the maximum and minimum values of quadratic equations:

- if the quadratic coefficient is positive, the parabola will open up
  - x-value of the vertex tells where the minimum value is
  - y-value of the vertex gives the minimum value
- if the quadratic coefficient is negative, the parabola will open down
  - x-value of the vertex tells where the maximum value is
  - y-value of the vertex gives the maximum value

Find the minimum or maximum value:

$$f(x) = -2x^2 + 4x - 3$$

↑

opens down → maximum

$$x = \frac{-b}{2a} = \frac{-4}{2(-2)} = \frac{-4}{-4} = 1$$

$$f(1) = -2(1)^2 + 4(1) - 3$$

$$= -2 + 4 - 3$$

$$f(1) = -1$$

∴ The maximum value is -1.

Assignment:

p.414 #12-32 even