

## 1.1: Numbers and Estimation

Friday, August 16, 2019 3:22 PM

### **Day 1 – Bucky the Badger**

#### **Watch this!**

<http://mrmeyer.com/threeracts/buckythebadger/>

Guess how many push-ups Bucky had to perform in the course of the game.

Let's get into groups of three or so to further explore this question.

#### **Task #1: Bucky the Badger**

- Restate the Bucky the Badger problem in your own words.
- About how many total push-ups do you think Bucky did during the game?
- Write down a number that you know is too high.
- Write down a number that you know is too low.
- What further information would you need to know in order to determine the exact number of total push-ups Bucky did in the course of the game?

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- If you're Bucky, would you rather your team score their field goals at the start of the game or the end?
- What are some numbers of pushups that Bucky will never do in any game?

**Closure** - Model with mathematics the following situation:

Let  $x$  denote the number of touchdowns Wisconsin scored in a game. Assuming the Wisconsin football team only scores touchdowns, write an algebraic expression to represent the total number of pushups Bucky must do in a game in which  $x$  touchdowns are scored.

## Day 2

### Task #2: Reasoning about Multiplication and Division and Place Value

Use the fact that  $13 \times 17 = 221$  to find the following:

a.  $13 \times 1.7$       22.1

b.  $130 \times 17$       2210

c.  $13 \times 1700$       22100

d.  $1.3 \times 1.7$       2.21

e.  $2210 \div 13$       170

f.  $22100 \div 17$       1300

g.  $221 \div 1.3$       170

### Task #3: Felicia's Drive

As Felicia gets on the freeway to drive to her cousin's house, she notices that she is a little low on gas. There is a gas station at the exit she normally takes but she wonders if she will have to get gas before then. She normally sets her cruise control at the speed limit of 70mph and the freeway portion of the drive takes about an hour and 15 minutes. Her car gets about 30 miles per gallon on the freeway, and gas costs \$2.50 per gallon

$$\begin{array}{r} 70 \text{ mi} \times 1 \text{ hr} \\ + \\ 7.5 \text{ mi} \times \frac{1}{4} \text{ hr} \end{array}$$

Her car gets about 30 miles per gallon on the freeway, and gas costs \$3.50 per gallon.

$$70 \text{ m} \times \frac{1}{4} \text{ hr}$$

a. Describe an estimate that Felicia might do in her head while driving to decide how many gallons of gas she needs to make it to the gas station at the other end.

$$\frac{70 \text{ mi}}{1 \text{ hr}} \cdot \frac{1.25 \text{ hr}}{1} = 87.5 \text{ mi}$$

b. Assuming she makes it, how much does Felicia spend per mile on the freeway?

$$\$3.5 = 30 \text{ mi}$$

$$\$0.12 = 1 \text{ mi}$$

$$\uparrow 0.1166$$

$$\frac{3.5}{X} = \frac{30}{1}$$

$$\frac{3.5}{30} = X$$