

# Investigative Science

**Learning goal:** Make accurate and precise measurements using proper significant figures when collecting and organizing data.

Page 20

Friday July 31, 2015



## Warm-up: the oddity of the English system of measurement

**Warm-up:** How many....

1. Inches in a foot?
2. Feet in a yard?
3. Ounces in a pound?
4. Feet in a mile?
5. Quarts in a gallon?
6. Pounds in a ton?
7. Teaspoons in a tablespoon?
8. Quarter-cups in a cup?
9. Gallons in a barrel?
10. How many feet in a furlong?

**Warm-up:** How many....

1. 12 inches in a foot
2. 3 feet in a yard
3. 16 ounces in a pound
4. 5,280 feet in a mile
5. 4 quarts in a gallon
6. 2,000 pounds in a ton
7. 3 teaspoons in a tablespoon
8. 4 quarter cups in a cup
9. 31.5 gallons in a barrel
10. 660 feet in a furlong

4

Evaluate  
based on  
A&P

3

Distinguish  
A&P in  
data

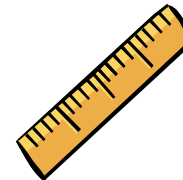
2

Importance  
of A&P

1

Define  
A&P

# Investigative Science



**Learning goal:** Make accurate and precise measurements using proper significant figures when collecting and organizing data.

Page 20

Friday July 31, 2015

**Learning goal:** Make accurate and precise measurements using proper significant figures when collecting and organizing data.

**Learning scale:**

1	2	3	4
Define accuracy and precision	Explain the importance of accuracy and precision in science	Differentiate between accuracy and precision when measuring and calculating	Supporting or rejecting a hypothesis based on the accuracy and precision of data in an investigation

4	Evaluate based on A&P
3	Distinguish A&P in data
2	Importance of A&P
1	Define A&P

**Student's self-evaluation:** Complete at home or at the end of class, use the *4-3-2-1 Learning scale* (two to three sentences).

**Homework:** "Measure for measure" article.

# Investigative Science



**Learning goal:** Make accurate and precise measurements using proper significant figures when collecting and organizing data.

Page 21

Friday July 31, 2015

When making a measurement, estimate one digit beyond what the device tells you. The black digits are know, the red digits are estimates.

Figure 1

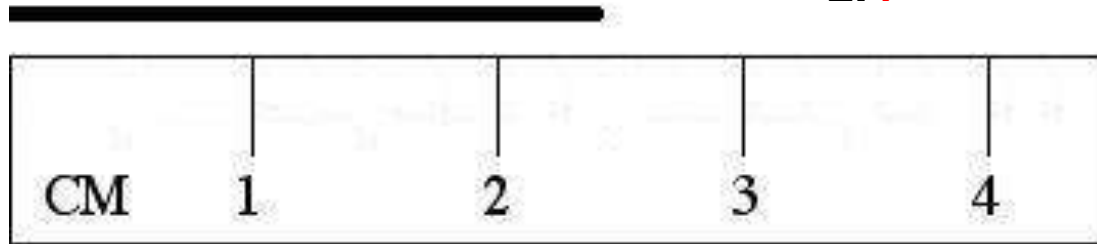
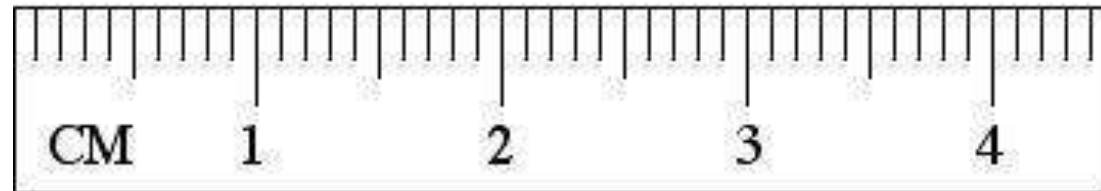


Figure 2



4  
Evaluate  
based on  
A&P

3  
Distinguish  
A&P in  
data

2  
Importance  
of A&P

1  
Define  
A&P

# Investigative Science

**Learning goal:** Make accurate and precise measurements using proper significant figures when collecting and organizing data.

Page 21

Friday July 31, 2015



Complete Quiz 02.

Quiz 02 will be pasted on to page 21 after it is graded and returned.

After you complete the quiz, please turn it over and put your pencil/pen down.

We will grade the quizzes in class, quiz corrections must be handed in before the end of the class hour.

**4**

Evaluate based on A&P

**3**

Distinguish A&P in data

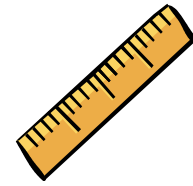
**2**

Importance of A&P

**1**

Define A&P

# Investigative Science



**Learning goal:** Make accurate and precise measurements using proper significant figures when collecting and organizing data.

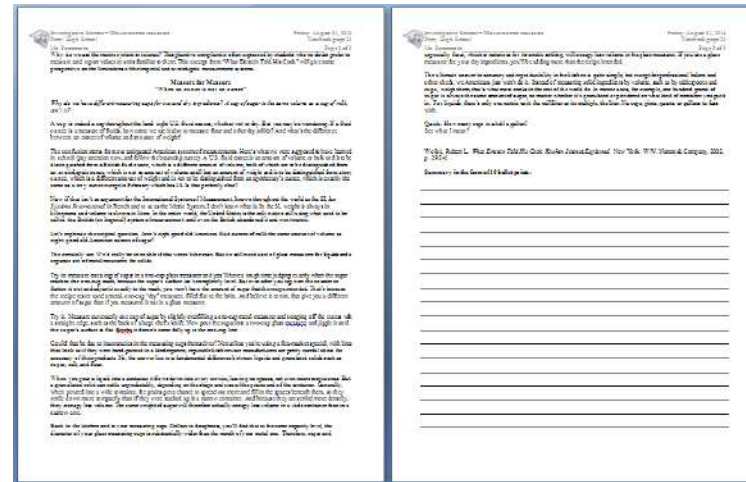
Page 22

Friday July 31, 2015

After completing corrections read the article "Measure for measure".

Mark the article as you see fit to indicate important information. Summarize the information in the form of 10 bullet points on the back of the article.

- Bullet points can be sentence fragments
- Bullet points must be logically written



These markings and the 10 bullet points will be homework if not done at the end of the class hour. The article will be pasted on page 22.

4

Evaluate based on A&P

3

Distinguish A&P in data

2

Importance of A&P

1

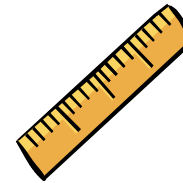
Define A&P

# Investigative Science

**Learning goal:** Make accurate and precise measurements using proper significant figures when collecting and organizing data.

Page 19

Thursday July 30, 2015



## Data analysis: Model 1 – Graphs and charts of classroom measurement data

1. According to the data in Model 1, how many females fall within the range of 146 – 155 cm tall? **2**
2. Using the graph(s) in Model 1, determine the approximate average height of males and of females. **Males: 179. Females: 161**
3. How many males are taller than 175 cm and approximately what percentage of the total is that? **10 are taller, this about 25%**
4. Which graph(s)/chart(s) illustrate the answer to the previous question?  
**Figures 8 and 10**
5. Which type of graph/chart in Model 1 shows data in a side by side comparison?  
**Figures 9**

4

Evaluate based on A&P

3

Distinguish A&P in data

2

Importance of A&P

1

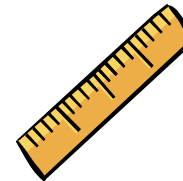
Define A&P

# Investigative Science

**Learning goal:** Make accurate and precise measurements using proper significant figures when collecting and organizing data.

Page 19

Thursday July 30, 2015



6. Which type of graph or chart in Model 1 shows trends in data across an entire data set?

Figure 10

7. Describe two trends in male and female height using the line graph.

There are more males above 170 cm than below, there are more females under 170 cm than above 170 cm.

8. Compare the presentation of height data in the three graphs. Discuss information located on multiple graphs, and information unique to each graph. Information contrasts the difference in proportion of “tall” and “short” individual by gender.

9. If you want to see if a correlation exists between height and hand length, what is the best type of graph/chart to make?

A graph with hand length as the IV and height as the DV

10. What conclusions can you draw comparing the height, hand length, and knuckle width of males and females?

Males tend to be taller with greater hand and knuckle length

4

Evaluate based on A&P

3

Distinguish A&P in data

2

Importance of A&P

1

Define A&P