

Vocabulary

Word Bank:

<i>coefficient</i>	<i>constant</i>	<i>denominator</i>	<i>difference</i>
<i>percentage</i>	<i>like terms</i>	<i>numerator</i>	<i>product</i>
<i>slope-intercept form</i>	<i>mean</i>	<i>linear-standard form</i>	<i>quotient</i>
<i>range</i>	<i>sum</i>	<i>x-intercept</i>	<i>y-intercept</i>
<i>mode</i>	<i>median</i>	<i>probability</i>	<i>slope</i>

1. _____ the bottom number in a fraction
2. _____ an amount obtained by addition
3. _____ $y = mx + b$
4. _____ $Ax + By = C$
5. _____ mathematical average of all the terms in a data set
6. _____ an amount obtained by multiplication
7. _____ the point where a line crosses the *y-axis*
8. _____ a value or quantity at the midpoint of a data set
9. _____ an amount obtained by division
10. _____ the point where a line crosses the x-axis
11. _____ the top number in a fraction
12. _____ an amount obtained by subtraction
13. _____ the number being multiplied by a variable (the number in front of the variable)
14. _____ a term that has no variable factor (it is just a number)
15. _____ terms with exactly the same variable
16. _____ the ratio of a line's vertical change to its horizontal change
17. _____ the most frequently occurring value in a data set
18. _____ a rate, number, or amount in each hundred
19. _____ the likelihood of a given event's occurrence
20. _____ the difference between the lowest and highest values

Simplify. Leave answers in radical form (no decimals).

$$\sqrt{18}$$

$$5\sqrt{80}$$

$$3\sqrt{2} \cdot 5\sqrt{10}$$

Solving Equations

Solve the following equations.

$$\frac{r+8}{-3} = -2$$

$$-2 + 10x = 8x - 1$$

$$3 + \frac{2}{5}y = 11 - \frac{2}{5}y$$

Factoring Quadratic Equations

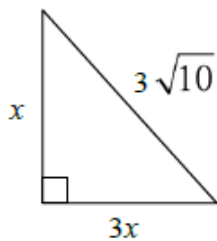
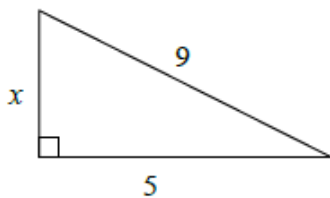
$$x^2 + 9x + 20$$

$$x^2 + 4x - 32$$

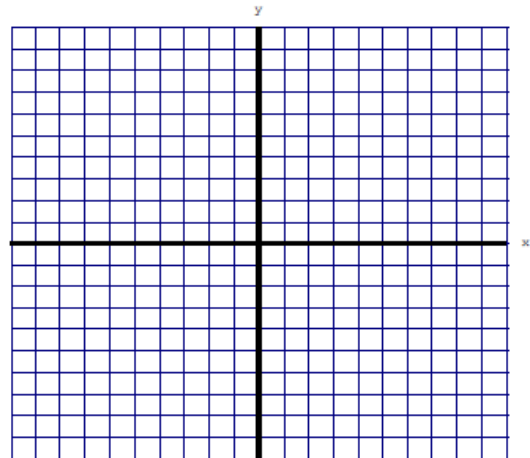
$$4x^2 - 25$$

Pythagorean Theorem

Find the missing side length. If needed, round to the nearest tenth.



Write the equation of a line that passes through $(-3, 2)$ and is parallel to $x - y = 7$. Then graph.



Scientific Notation Word Problems

1. The particle of dust has a mass of 7.53×10^{-10} kilograms. Find the weight of 5 billion dust particles.

2. The distance from the sun to the Andromeda galaxy is 1.2×10^{19} miles. Light travels at a speed of 5.88×10^{12} miles per year (called a light-year). How long does it take light to travel from the sun to the Andromeda galaxy?

Name _____ **INCOMING 11th Graders Math and Science Packet**

3. The mass of the sun is 1.989×10^{30} kilograms. The mass of the earth is 5.98×10^{24} kilograms. How many times bigger is the sun than the earth?

4. Total health care costs in the United States in 2003 was \$1.7 trillion. The U.S. population was 290.9 million. What was the average amount spent per person on health care?

Science, Measurement, and Uncertainty: Accuracy and Precision

Name _____ Period _____ Date _____

ACCURACY AND PRECISION

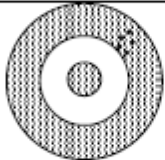
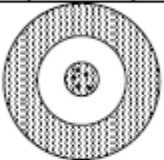
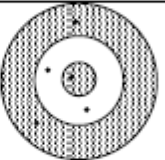
Definitions:

Accuracy - how close a measurement is to _____

Precision - how close a measurement is to _____

Precision versus Accuracy:

Look at each target and decide whether the "hits" are accurate, precise, both accurate and precise, or neither accurate nor precise: (Note: An accurate "hit" is a bulls eye!)

		
Accurate?: Yes / No Precise?: Yes / No	Accurate?: Yes / No Precise?: Yes / No	Accurate?: Yes / No Precise?: Yes / No

Precision Problems:

A group of students worked in separate teams to measure the length of an object. Here are their data:

Team 1	Team 2	Team 3	Team 4	Team 5	Team 6	Team 7
2.65 cm	2.75 cm	2.80 cm	2.77 cm	2.60 cm	2.65 cm	2.68 cm

- The average length is _____ cm.
This is the mean or average.
- Subtract the highest value from the lowest value: _____ cm.
This is the range or spread.
- Divide this number by 2: _____ cm.
This is the approximate \pm range from the average.
- The precision of the measurement can be shown as average \pm range.
The precision of the measurement was _____ \pm _____ cm.

A second group of students obtained the following data:

Team 8	Team 9	Team 10	Team 11	Team 12	Team 13	Team 14
2.60 cm	2.70 cm	2.80 cm	2.75 cm	2.65 cm	2.62 cm	2.78 cm

- The average length is _____ cm.
- The precision of the measurement was _____ ± _____ cm.

In comparing groups, the first or the second, which group was more precise or was the precision the same? **Justify your answer.**

Expressing Errors in Measurement:

Scientists often express their uncertainty and error in measurement by giving a percent error. The percent error is defined as:

$$\% \text{ error} = \frac{\text{actual value} - \text{measured value}}{\text{actual value}} \times 100$$

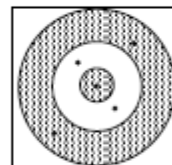
Answer the following four questions. Pay attention to significant figures, and **show your work!**

1. While doing a lab, a student found the density of a piece of pure aluminum to be 2.85 g/cm³. The accepted value for the density of aluminum is 2.70 g/cm³. What was the student's percent error?

2. A student measured the specific heat of water to be $4.29 \text{ J/g} \cdot \text{C}^\circ$. The literature value of the specific heat of water is $4.18 \text{ J/g} \cdot \text{C}^\circ$. What was the student's percent error?

3. A student took a calibrated 200.0 gram mass, weighed it on a laboratory balance, and found it read 196.5 g. What was the student's percent error?

4. Accuracy is often expressed as an average of several measurements. Look at the target to the right. In your opinion, how well do the measurements on the target represent: (Justify your opinion.)



a. Accuracy?

b. Precision?