

NAME: _____

P.I. A2.A.1: Solve absolute value equations involving linear expressions in one variable

1. When Spheres-R-Us ships bags of golf balls, each bag must be within 7 balls of 600. Which equation is an absolute value equation representing the high and low values, and what are those values?

[A] $|m-600| = 7$; 593, 607

[B] $|600-7| = m$; 7, 14

[C] $|m-7| = 600$; 593, 607

[D] $|600-m| = 7$; 7, 14

2. The ideal surface area of a rubber ball shipped from the factory is 54.25 square inches. The company inspector insists that the balls shipped vary no more than 0.5 square inches of this total. Find the minimum and maximum values for the surface area of rubber balls shipped.

3. One poll reported the 48% of city residents were against building a new highway. The polling service stated that this poll was accurate to within 3%. Use an absolute value equation to find the minimum and maximum percents of city residents who are against building a new highway.

4. Use the problem solving strategy of *Draw a Diagram* to solve the following problem. The ideal diameter of the inside opening of a pipe is 3.85 cm. This opening can vary by at most 0.015 cm. Find the maximum and minimum diameters of this inside opening.

5. Use the problem solving strategy *Guess and Test* to determine the values of a and b for which the equation $|x+a| = b$ will have exactly one solution.

6. a. Use a graphing calculator to graph $y = 4|x| - 1$ and $y = 2$.
b. Use the CALC feature of the calculator to identify the x -coordinates of the points where the graphs intersect.
c. What absolute value equation have you solved?

7. Use each of the symbols $|$, x , 4 , 2 , -1 , $-$, and $=$ once to write an absolute value equation. Then solve your equation.

8. Write a problem about a poll that is accurate to within 3.5% that can be solved using an absolute value equation. Then solve your problem.

[1] A

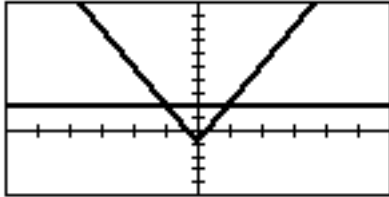
[2] min: 53.75, max: 54.75

[3] 45% to 51%

[4] 3.835 cm to 3.865 cm

[5] any value for a ; b must be 0

a.



b. $-0.75, 0.75$

[6] c. $4|x| - 1 = 2$

Answers may vary. Sample: $|x - 4| - 1 = 2$

[7] ; 1, 7

Answers may vary. Sample: One poll reported that 55% of the voters favor Ernie Miller for mayor. The polling service stated that this poll was accurate to within 3.5%. Use an absolute value equation to find the minimum and maximum percents of voters who favor

[8] Ernie Miller for mayor.; 51.5% to 58.5%