



Problem Solving

Solving Absolute-Value Equations and Inequalities

Gita's science class is making a set of posters about North American wildlife. The table shows some of the data collected.

- What is the center of each weight group?
 - W_1 _____
 - W_2 _____
 - W_3 _____
- Express each weight group as an absolute-value expression.
 - W_1 _____
 - W_2 _____
 - W_3 _____
- Write inequalities to show the amount of food required each day for animals in each weight group.
 - W_1 _____
 - W_2 _____
 - W_3 _____

North American Wildlife		
Weight Groups (kg)	Animal	Daily Food Requirement (kg)
W_1 135–450	Grizzly bear	10.5
	Polar bear	9.9
	Black bear	3.9
W_2 10–90	Mule deer	2.8
	Arctic wolf	2.3
	River otter	0.8
W_3 3–8	Nutria	0.38
	Opossum	0.19
	Rabbit	0.18

- Gita wants to use the term *disjunction* or *conjunction* on her poster showing the inequalities. Which term should she use? Why?

- Les includes the following on his poster:
Solve this equation to find the number of kilograms of food consumed each day by an animal in one of the weight groups:

$$|f - 7.2| \leq 3.3.$$

Find the solution.

- Write an absolute-value inequality to represent the maximum weight difference between a grizzly bear, g , and a black bear, b .



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Solving Absolute-Value Equations and Inequalities

Gita's science class is making a set of posters about North American wildlife. The table shows some of the data collected.

- What is the center of each weight group?
 - W_1 292.5
 - W_2 50
 - W_3 5.5
- Express each weight group as an absolute-value expression.
 - W_1 $|W_1 - 292.5| \leq 157.5$
 - W_2 $|W_2 - 50| \leq 40$
 - W_3 $|W_3 - 5.5| \leq 2.5$
- Write inequalities to show the amount of food required each day for animals in each weight group.
 - W_1 $f \geq 3.9$ and $f \leq 10.5$
 - W_2 $f \geq 0.8$ and $f \leq 2.8$
 - W_3 $f \geq 0.18$ and $f \leq 0.38$

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- Gita wants to use the term *disjunction* or *conjunction* on her poster showing the inequalities. Which term should she use? Why?

Conjunction; Possible answer: the compound statement uses the term *and*.

- Les includes the following on his poster:
Solve this equation to find the number of kilograms of food consumed each day by an animal in one of the weight groups:

$$|f - 7.2| \leq 3.3.$$

Find the solution.

$$\underline{3.9 \leq f \leq 10.5}$$

- Write an absolute-value inequality to represent the maximum weight difference between a grizzly bear, g , and a black bear, b .

$$\underline{|g - b| \leq 315}$$