25—Soccer Abroad

¹Micah and Steven are going to Romania with their soccer team. ²Romania is a country in Eastern Europe. ³Coach Kim gave the team the airline regulations for the size and weight of their luggage (shown below). ⁴He warned, "You must follow these rules or you'll have to pay a lot of extra money. ⁵You can bring one carry-on suitcase to take inside the plane and one larger suitcase to check in. ⁶Don't bring anything else!"

⁷Steven said, "I don't get the 62 inches linear dimension rule."

⁸Coach explained, "Add length plus width plus height and make sure your sum is no more than 62 inches."

⁹Micah asked, "Instead of adding,

why don't they multiply the dimensions to get the volume and give people a list with volume restrictions?"

¹⁰Coach replied, "Micah, I have no idea—just follow the rules."

¹¹Micah has a carry-on suitcase that measures 14" x 9" x 22" and weighs 21 lbs after being packed. ¹²The bigger suitcase that he wants to check in measures 7" x 24" x 32" and weighs 75 lbs after being packed.

¹³Steven went shopping for a suitcase whose linear measures had a sum closest to 62", but whose dimensions multiplied to the biggest volume possible. ¹⁴His smaller carry-on suitcase measured 21" x 13" x 9". ¹⁵It weighed 10 lbs when packed.

Airline Baggage Regulations	
1 carry-on suitcase 22" x 14" x 9" (must weigh less than 20 lbs)	
Check-in items: 1 suitcase with linear dimensions, length + width + height no more than 62". (Items between 62" and 80" will be charged \$80 extra.)	
Check-in items must weigh no more than 70 lbs. (Items that weigh more than 70 lbs up to 100 lbs will be charged \$110 extra.) Items weighing more than 100 lbs are not allowed.	
1 in. = 2.54 cm 1 cm = .39 in.	1 lb = .454 kg <mark>1 kg</mark> = <mark>2.2 lb</mark>

Questions

- 1. In the diagram Elijah drew, the length (x) of the slide is the ______of the right triangle.
 - a. hypotenuse side c. opposite side
 - b. adjacent side d. smallest side
- 2. In relationship to the 60° angle, the length of the ladder shows
 - a. the adjacent side. c. the opposite side.
 - b. the hypotenuse side. d. none of these.
- 3. Which of the following formulas should Elijah use to find the length of the slide?
 - a. $\sin 60^{\circ} = \frac{4}{x}$ b. $\cos 60^{\circ} = \frac{x}{4}$ c. $\cos 60^{\circ} = \frac{4}{x}$ d. $\sin 60^{\circ} = \frac{x}{4}$
- 4. Which of the following is the design Latarsha wants to use for the slide?



Give the number of the sentence that provides the best evidence for the answer.

- 5. Find the length of the slide using Latarsha's design. _____ Show your work.
- 6. If the ladder is 4 feet, the hypotenuse is x, and the angle between them is 60°, which of the following is the same as $\cos 60^\circ = \frac{4}{x}$?
 - a. $\sin 30^{\circ} = \frac{4}{x}$ b. $\sin 30^{\circ} = \frac{x}{4}$ c. $\tan 60^{\circ} = \frac{4}{x}$ d. $\cos 30^{\circ} = \frac{x}{4}$

Questions

- 1. When comparing the formulas to the chart, Alex found that the Celsius scale
 - a. changes by 5s while the Fahrenheit scale changes by 9s.
 - b. changes by 9s and the Fahrenheit scale changes by 9s.
 - c. is 32 degrees less than the Fahrenheit scale.
 - d. is 32 degrees more than the Fahrenheit scale.
- 2. By using the chart, Alex found out that 35 degrees Celsius (35°C) is the same as what temperature in Fahrenheit? _____
- 3. When Marcos called back, he told Alex that his sister had a fever of 40°C. What temperature is that in Fahrenheit?
- 4. In the Fahrenheit scale, the freezing point of water is 32 degrees (or 0° Celsius). The boiling point of water is 212° F. What is the boiling point of water in Celsius? ______ Show the formula you would use and then show your work.

- Around the December holidays, <u>Alex</u> called <u>Marcos</u> and told him the temperature was -20° F. What temperature is that in Celsius? _____ Round the answer to the nearest tenth of a degree. Write the formula you would use and then show your work.
- 6. At -40° the temperature is the same on both scales. Use an algebra formula to show why this is so. Let F = C and then solve for that variable.