56. FALLING OBJECT Fenway Park is a Major League Baseball park in Boston, Massachusetts. The park offers seats on top of the left field wall. A person sitting in one of these seats accidentally drops his sunglasses on the field. The height h (in feet) of the sunglasses can be modeled by the function $h = -16t^2 + 38$ where t is the time (in seconds) since the sunglasses were dropped. Find the time it takes for the sunglasses to reach the field. Round your answer to the nearest hundredth of a second.

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57. ◆ **TAKS REASONING** Which equation can be used to find the time it takes for an object to hit the ground after it was dropped from a height of 68 feet?

(**A**) $-16t^2 = 0$ (**B**) $-16t^2 - 68 = 0$ (**C**) $-16t^2 + 68 = 0$ (**D**) $-16t^2 = 68$

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58. INTERNET USAGE For the period 1995–2001, the number y (in thousands) of Internet users worldwide can be modeled by the function $y = 12{,}697x^2 + 55{,}722$ where x is the number of years since 1995. Between which two years did the number of Internet users worldwide reach 100,000,000?

59. GEMOLOGY To find the weight w (in carats) of round faceted gems, gemologists use the formula $w = 0.0018D^2 ds$ where D is the diameter (in millimeters) of the gem, d is the depth (in millimeters) of the gem, and s is the specific gravity of the gem. Find the diameter to the nearest tenth of a millimeter of each round faceted gem in the table.

	Gem	Weight (carats)	Depth (mm)	Specific gravity	Diameter (mm)
a.	Amethyst	1	4.5	2.65	?
b.	Diamond	1	4.5	3.52	?
c.	Ruby	1	4.5	4.00	?

60. ◆ **TAKS REASONING** In deep water, the speed s (in meters per second) of a series of waves and the wavelength L (in meters) of the waves are related by the equation $2\pi s^2 = 9.8L$.

Crest   Crest
The wavelength L is the distance between one crest and the next.
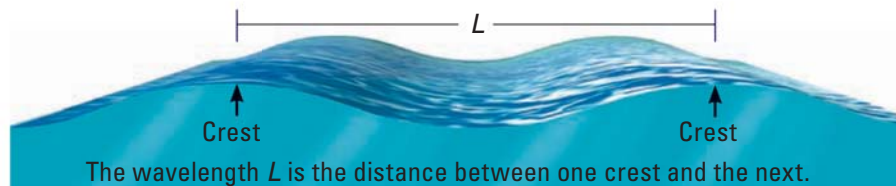
a. Find the speed to the nearest hundredth of a meter per second of a series of waves with the following wavelengths: 6 meters, 10 meters, and 25 meters. (Use 3.14 for π.)

b. Does the speed of a series of waves increase or decrease as the wavelength of the waves increases? *Explain.*