60. **EXTENDED RESPONSE** If X-rays of a fixed wavelength strike a material x centimeters thick, then the intensity $I(x)$ of the X-rays transmitted through the material is given by $I(x) = I_0 e^{-\mu x}$, where I_0 is the initial intensity and μ is a number that depends on the type of material and the wavelength of the X-rays. The table shows the values of μ for various materials. These μ-values apply to X-rays of medium wavelength.

Material	Aluminum	Copper	Lead
Value of μ	0.43	3.2	43

a. Find the thickness of aluminum shielding that reduces the intensity of X-rays to 30% of their initial intensity. (*Hint:* Find the value of x for which $I(x) = 0.3I_0$.)

b. Repeat part (a) for copper shielding.

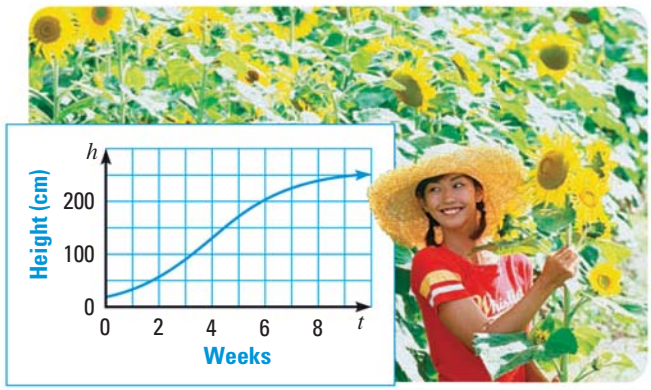
c. Repeat part (a) for lead shielding.

d. **Reasoning** Your dentist puts a lead apron on you before taking X-rays of your teeth to protect you from harmful radiation. Based on your results from parts (a)–(c), explain why lead is a better material to use than aluminum or copper.

61. **CHALLENGE** You plant a sunflower seedling in your garden. The seedling's height h (in centimeters) after t weeks can be modeled by the function below, which is called a *logistic function*.

$$h(t) = \frac{256}{1 + 13e^{-0.65t}}$$

Find the time it takes the sunflower seedling to reach a height of 200 centimeters.



MIXED REVIEW FOR TAKS

TAKS PRACTICE at classzone.com

REVIEW
Lesson 4.1;
TAKS Workbook

62. **TAKS PRACTICE** Which list shows the functions in order from the widest graph to the narrowest graph? *TAKS Obj. 5*

Ⓐ $y = -5x^2, y = -\frac{2}{3}x^2, y = \frac{5}{6}x^2, y = 8x^2$

Ⓑ $y = -\frac{2}{3}x^2, y = \frac{5}{6}x^2, y = -5x^2, y = 8x^2$

Ⓒ $y = \frac{5}{6}x^2, y = -\frac{2}{3}x^2, y = 8x^2, y = -5x^2$

Ⓓ $y = 8x^2, y = \frac{5}{6}x^2, y = -\frac{2}{3}x^2, y = -5x^2$

REVIEW
Skills Review
Handbook p. 994;
TAKS Workbook

63. **TAKS PRACTICE** In the diagram, $m\angle 2 = m\angle 3$. What is $m\angle 1$? *TAKS Obj. 6*

Ⓕ 136° Ⓖ 164°

Ⓗ 174° Ⓙ 194°