

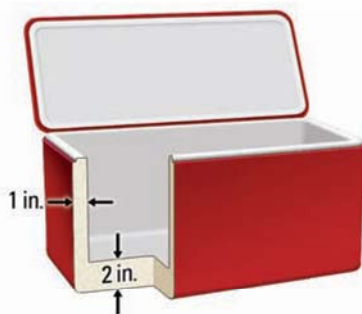


MIXED REVIEW FOR TEKS

Lessons 5.1–5.5

MULTIPLE CHOICE

1. **ASTRONOMY** The average distance between Earth and the sun is 1.64×10^{11} yards. The length of a football field, including the end zones, is 1.20×10^2 yards. About how many football fields stretched end-to-end would it take to reach from Earth to the sun? **TEKS 2A.2.A**
- (A) 1.37×10^7
 (B) 1.37×10^9
 (C) 1.37×10^{10}
 (D) 1.37×10^{13}
2. **PRODUCT DESIGN** You are designing a rectangular picnic cooler with length 4 times its width and height 2 times its width. The cooler has insulation that is 1 inch thick on each of the four sides and 2 inches thick on the top and bottom. Let x represent the width of the cooler. What is a polynomial function $C(x)$ in standard form for the volume of the inside of the cooler? **TEKS a.4**



- (F) $C(x) = 8x^3 - 18x^2 + 12x - 2$
 (G) $C(x) = 8x^3 - 28x^2 + 28x - 8$
 (H) $C(x) = 8x^3 - 36x^2 + 48x - 16$
 (J) $C(x) = 8x^3 + 36x^2 + 48x + 16$
3. **END BEHAVIOR** Which polynomial function has degree 4 and end behavior given by $f(x) \rightarrow -\infty$ as $x \rightarrow -\infty$ and $f(x) \rightarrow -\infty$ as $x \rightarrow +\infty$? **TEKS a.3**
- (A) $f(x) = 4x^3 - 4x^2 + x + 5$
 (B) $f(x) = x^4 - x^3 + 2x^2 - 5x + 2$
 (C) $f(x) = -x^4 + 5x^2 - x + 20$
 (D) $f(x) = -4x^6 + x^4 + 4$

4. **PACKAGING DESIGN** A floral shop has a rectangular gift box with a volume of 540 cubic inches. The width of the gift box is 3 inches less than the height, and the length is 15 inches greater than the height. What is the height of the gift box to the nearest tenth of an inch? **TEKS a.4**
- (F) 3.7 inches (G) 6.7 inches
 (H) 12.0 inches (J) 21.7 inches
5. **MANUFACTURING** The price p (in dollars) that a camera manufacturer is able to charge for a camera is given by $p = 100 - 10x^2$ where x is the number (in millions) of cameras produced. It costs the company \$30 to make a camera. Currently, the company produces 2 million cameras and makes a profit of \$60,000,000. What other number of cameras could the company produce and still make the same profit? **TEKS a.3**
- (A) 1 million (B) 3 million
 (C) 4 million (D) 5 million

GRIDDED ANSWER

6. **TELECOMMUNICATIONS** From 1995 to 2003, the average monthly cell phone bill C (in dollars) for subscribers in the United States can be modeled by the function

$$C = -0.027t^4 + 0.32t^3 - 0.25t^2 - 4.9t + 51$$

where t is the number of years since 1995. According to this model, what was the average monthly cell phone bill in 2001? Round your answer to the nearest cent.

TEKS a.3

7. **SCULPTURE** For the city park commission, you are designing a marble sculpture in the shape of a pyramid with a square base, as shown below. The volume of the sculpture is 48 cubic feet. What is the height x (in feet) of the sculpture? **TEKS a.4**

