Lessons 12.1–12.4
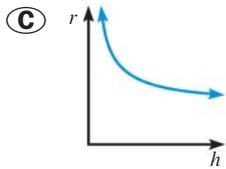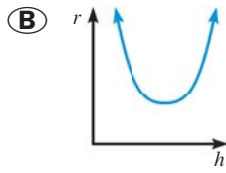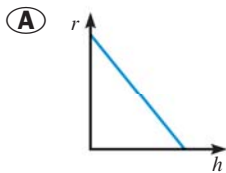
MULTIPLE CHOICE

1. **PACKAGING** A retail company is designing a package in the shape of a rectangular prism whose base is 3 feet by 2 feet. The company is trying to decide the height of the package by considering the ratio of the package's surface area to volume. Which graph represents the ratio r as a function of the height h? *TEKS A.1.D*

(A)

(B)

(C)

(D)
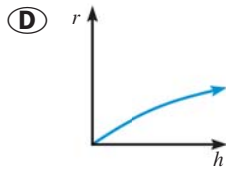
2. **SEAFOOD** The average amount A (in pounds per person) of fish and shellfish consumed in the United States during the period 1992–2001 can be modeled by

$$A = \frac{52x + 3800}{3.2x + 260}$$

where x is the number of years since 1992. What was the approximate average number of pounds of fish and shellfish consumed per person in 2001? *TEKS A.4.A*

(F) 15   (G) 16

(H) 1142   (J) 11,416

3. **TRIP EXPENSES** You and some friends are taking a car trip to an amusement park. Admission costs $50 per person, and everyone will share the combined cost of gas and parking, which is $30. How much more will one person pay (in dollars) if 4 people go on the trip than if 5 people go? *TEKS a.3*

(A) $1.50   (B) $4

(C) $11.50   (D) $56

4. **SHIPMENTS** A truck is traveling to a town 250 miles away to pick up a shipment. When the truck arrives in the town, the driver will take 4 hours to load the truck. The truck will then return with the shipment. Suppose you graph the time t (in hours) of the entire trip as a function of the average rate r (in miles per hour) the truck travels. How would the graph change if the truck is loaded in 3 hours instead of 4 hours? *TEKS a.5*

(F) The graph would be a horizontal translation 1 unit to the right.

(G) The graph would be a vertical translation 1 unit down.

(H) The graph would be a vertical stretch.

(J) The graph would be a vertical shrink.

5. **GAS** The table shows the relationship between the volume (in liters) and the pressure (in kilopascals) of a certain gas in a container. Which equation models the relationship between the volume V of the gas and the pressure P? *TEKS A.3.B*

Volume (L)	20	5	2.5	1.6	0.4
Pressure (kPa)	1	4	8	12.5	50

(A) $V = 20P$ (B) $V = \dfrac{20}{P}$

(C) $20 = \dfrac{1}{V + P}$ (D) Not here

GRIDDED ANSWER ⓪①●③④⑤⑥⑦⑧⑨

6. **POPULATION** A town's population density (in people per square mile) is the ratio of the population of the town to the area (in square miles) of the town. Suppose a town has a population of 30,000 people and an area of 120 square miles. How many people would need to move into the area before the town's population density is 275 people per square mile? *TEKS A.3.A*