MIXED REVIEW FOR TEKS

TAKS PRACTICE
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Lessons 8.1–8.3

MULTIPLE CHOICE

1. **EFFICIENT PACKAGING** A food manufacturer wants to find the most efficient packaging for a cylindrical canister of oatmeal with a volume of 1663 cubic centimeters. An equation that gives the canister's surface area S in terms of its radius r is $S = 2\pi r^2 + \frac{3326}{r}$. Use a graphing calculator to graph the equation. What is the approximate radius r of the canister that uses the least material possible? *TEKS 2A.10.B*

   (A) 5.1 inches
   (B) 6.4 inches
   (C) 6.6 inches
   (D) 8.1 inches

2. **BODY MASS INDEX** The body mass index b of a person varies directly with the person's weight w (in kilograms) and inversely with the square of the person's height h (in meters). A person who is 1.6 meters tall and weighs 51.2 kilograms has a body mass index of 20. What is the approximate height of a person who weighs 45 kilograms and has a body mass index of 20? *TEKS 2A.10.G*

   (F) 1.2 meters
   (G) 1.4 meters
   (H) 1.5 meters
   (J) 2.3 meters

3. **CANDY SALES** The number y of boxes of candy a manufacturer sells each month varies inversely with the price x (in dollars). In one month, the manufacturer sells 800 boxes of candy at a price of \$5 per box. About how many boxes of candy will the manufacturer sell at a price of \$7 per box? *TEKS 2A.10.G*

   (A) 457 boxes (B) 571 boxes
   (C) 643 boxes (D) 686 boxes

4. **INVERSE VARIATION** Which equation represents inverse variation? *TEKS 2A.10.G*

   (F) $y = x + 3$ (G) $y = 2x$
   (H) $y = \frac{x}{3}$ (J) $xy = 11$

5. **PLAYGROUND AREA** You are designing a rectangular playground that has an area of 200 square yards. A building borders the length of the playground. You use fencing for the other three sides. Which length ℓ and width w minimize the amount of fencing needed? *TEKS 2A.10.D*

   (A) $\ell = 14$ yards; $w = 14$ yards
   (B) $\ell = 20$ yards; $w = 10$ yards
   (C) $\ell = 25$ yards; $w = 8$ yards
   (D) $\ell = 28$ yards; $w = 7$ yards

6. **PHOTO PRINTING** Your family buys a photo printer. The printer costs \$200. The ink and paper cost about \$.60 for each photo you print. Which equation gives the average cost C of a printed photo as a function of the number x of photos printed? *TEKS 2A.10.B*

   (F) $C = \frac{200 - 0.6x}{x}$
   (G) $C = \frac{200 + 0.6x}{x}$
   (H) $C = 200 + 0.6x$
   (J) $C = 200.6x$

GRIDDED ANSWER

7. **SOUND INTENSITY** The intensity I of a sound (in watts per square meter) varies inversely with the square of the distance d (in meters) from the source of the sound. At a distance of 1 meter from the stage, the intensity of the sound of a rock concert is about 10 watts per square meter. What is the intensity in watts per square meter of the sound you hear if you are 15 meters from the stage? Write your answer as a decimal rounded to the nearest hundredth. *TEKS 2A.10.G*

8. **MOTORCYCLE VALUE** The value M (in dollars) of a motorcycle t years after it was purchased new can be estimated using the function $M(t) = \frac{3500}{t} + 500$ where $t \geq 1$. Estimate the motorcycle's value 8 years after it was purchased. Round your answer to the nearest dollar. *TEKS 2A.10.D*