# MIXED REVIEW FOR TEKS

TAKS PRACTICE
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## Lessons 12.5–12.7

### MULTIPLE CHOICE

1. **REVENUE** For the period 1991–2002, the average total revenue $T$ (in dollars per admission) that a U.S. movie theater earned and the average revenue $C$ (in dollars per admission) that a U.S. movie theater earned from concessions can be modeled by

$$T = \frac{0.018x^2 + 5.4}{1 - 0.0011x^2} \quad \text{and} \quad C = \frac{0.013x^2 + 1.1}{0.0011x^2 + 1}$$

where $x$ is the number of years since 1991. Which equation gives the percent $p$ (in decimal form) of the average total revenue per admission that came from concessions as a function of $x$? *TEKS A.4.A*

Ⓐ $p = \dfrac{(1 - 0.0011x^2)(0.013x^2 + 1.1)}{(0.018x^2 + 5.4)(0.0011x^2 + 1)}$

Ⓑ $p = \dfrac{(0.018x^2 + 5.4)(0.0011x^2 + 1)}{(1 - 0.0011x^2)(0.013x^2 + 1.1)}$

Ⓒ $p = \dfrac{(0.018x^2 + 5.4)(0.013x^2 + 1.1)}{(1 - 0.0011x^2)(0.0011x^2 + 1)}$

Ⓓ $p = \dfrac{(1 - 0.0011x^2)(0.0011x^2 + 1)}{(0.018x^2 + 5.4)(0.013x^2 + 1.1)}$

2. **ROWERS** A rower travels 5 miles upstream (against the current) and 5 miles downstream (with the current). The speed of the current is 1 mile per hour. Which equation gives the total travel time $t$ (in hours) as a function of the rower's average speed $r$ (in miles per hour) in still water? *TEKS a.4*

Ⓕ $t = \dfrac{10r}{r^2 - 1}$　　Ⓖ $t = \dfrac{2r}{5}$

Ⓗ $t = \dfrac{25}{r^2 - 1}$　　Ⓙ $t = \dfrac{10}{r}$

3. **COLLEGE DEGREES** The number $D$ (in thousands) of all college degrees earned and the number $M$ (in thousands) of master's degrees earned in the United States during the period 1984–2001 can be modeled by

$$D = \frac{17x^2 + 1800}{1 + 0.0062x^2} \quad \text{and} \quad M = \frac{2.5x^2 + 280}{1 + 0.0040x^2}$$

where $x$ is the number of years since 1984. Which equation gives the number $C$ of college degrees that were *not* master's degrees as a function of $x$? *TEKS A.4.A*

Ⓐ $C = \dfrac{17x^2 + 1800 + 2.5x^2 + 280}{(1 + 0.0062x^2)(1 + 0.0040x^2)}$

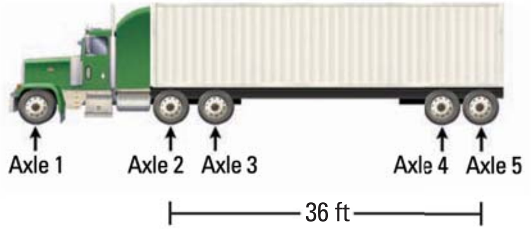
Ⓑ $C = \dfrac{17x^2 + 1800}{1 + 0.0062x^2} - \dfrac{2.5x^2 + 280}{1 + 0.0040x^2}$

Ⓒ $C = \dfrac{17x^2 + 1800}{1 + 0.0062x^2} + \dfrac{2.5x^2 + 280}{1 + 0.0040x^2}$

Ⓓ $C = \dfrac{(17x^2 + 1800)(2.5x^2 + 280)}{(1 + 0.0062x^2)(1 + 0.0040x^2)}$

### GRIDDED ANSWER

4. **WEIGHT CAPACITY** The diagram below shows the distance between the first axle and the last axle for a group of consecutive axles on a truck.




The maximum weight $W$ (to the nearest 500 pounds) that a truck on a highway can carry on a group of consecutive axles is given by the formula

$$W = 500\left(\frac{d}{n - 1} + 12n + 36\right)$$

where $d$ is the distance between the first axle and the last axle of the group and $n$ is the number of axles in the group. How many thousands of pounds can the truck carry on axles 2–5? *TEKS A.4.A*