**16** What are the coordinates of the $x$-intercept of the line that is represented by the equation $7x + 4y = 28$?

**(F)** (0, 4)

**(G)** (0, 7)

**(H)** (4, 0)

**(I)** (7, 0)

**17** For the simplified form of the product of $(3x^2 + 7)(2x + 9)$, what is the sum of the coefficients of the $x^2$ term and the $x$ term?

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**18** Which of the following is a sufficient condition to show that a graph of a equation does NOT represent a function?

**(F)** The domain is the set of all real numbers.

**(G)** A horizontal line intersects the graph at more than one point.

**(H)** There is exactly one $y$-intercept.

**(I)** A vertical line intersects the graph at more than one point.

**19** What is the result of multiplying $6x^2yz^3$ by $8x^2y^4z^3$?

**(A)** $48x^2yz^3$

**(B)** $48x^2y^4z^6$

**(C)** $48x^3y^5z^9$

**(D)** $48x^3y^5z^6$

**20** At a planetarium show, children's tickets cost \$10 apiece and adults' tickets cost \$20 apiece. These are the only two types of tickets sold. At a recent show, 29 tickets were sold for a total revenue of \$430. How many children's tickets were sold?

**(F)** 17

**(G)** 15

**(H)** 14

**(I)** 13

# Answers

**16** **(H)**

The $x$-intercept is found by setting $y$ equal to 0, then solving for $x$. Then $7x + (4)(0) = 28$, which becomes $7x = 28$. Dividing each side by 7 leads to $x = 4$. Therefore the $x$-intercept is represented by (4, 0).

**17** The correct answer is 41. $(3x^2 + 7)(2x + 9) = 6x^3 + 27x^2 + 14x + 63$. The sum the $x^2$ and the $x$ terms is $27 + 14 = 41$.

**18** **(I)**

If a vertical line intersects the graph more than once, then this implies that there are at least two points for which the $x$ value is identical and the $y$ value is different. This would violate the definition of a function.

**19** **(D)**

First multiply 6 by 8 to get 48. The rule for multiplication of terms with exponents is to add exponents of identical variables. Remember that $x$ means $x^1$. Then $(x^2yz^3)(xy^4z^3) = x^{2+1}y^{1+4}z^{3+3} = x^3y^5z^6$.

**20** **(G)**

Let $x$ represent the cost of a child's ticket and $y$ represent the cost of an adult's ticket. The cost (in dollars) of all adult tickets is $10x$ and the cost (in dollars) of all children tickets is $20y$. Then we need to solve the following system of equations.

$$\begin{cases} 10x + 20y = 430 \\ x + y = 29 \end{cases}$$

In order to eliminate $y$, multiply the second equation by 20 to get $20x + 20y = 580$. Now subtract the first equation to get $10x = 580 - 430 = 150$. Thus, $x = \dfrac{150}{10} = 15$, which is the number of children's tickets. (Note that the number of adult tickets is $29 - 15$, which is 14.)