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- 1) If  $a = 2$  and  $b = 5$ , which of the following expressions has the greatest value?  
(A)  $\frac{a}{b}$       (B)  $\frac{b}{a}$       (C)  $a - b$       (D)  $b - a$       (E)  $\frac{1}{2}a$
- 2) If  $x = 2$  and  $y = 1$ , the value of  $2x - 3y$  equals  
(A) 11      (B) 1      (C) 4      (D) 5      (E) 3
- 3) When  $x = 3$ , the value of  $x(x - 1)(x - 2)(x - 3)(x - 4)$  is  
(A) 6      (B)  $-6$       (C) 0      (D) 24      (E)  $-24$
- 4) If  $x = 3$ , which of the following is true?  
(A)  $2x = 5$       (B)  $3x - 1 = 8$       (C)  $x + 5 = 3$       (D)  $7 - x = 2$       (E)  $6 + 2x = 14$
- 5) When  $x = 3$  and  $y = 4$ , the value of  $xy - x$  is  
(A) 3      (B) 4      (C) 12      (D) 9      (E) 15
- 6) If  $a = -3$  and  $b = 2$ , the value of  $a(b - 3)$  is  
(A) 1      (B) 2      (C) 3      (D) 4      (E) 5
- 7) If  $x = -3$ , which of the following expressions has the smallest value?  
(A)  $x^2 - 3$       (B)  $(x - 3)^2$       (C)  $x^2$       (D)  $(x + 3)^2$       (E)  $x^2 + 3$
- 8) The number  $n$  is doubled and then has  $y$  added to it. The result is then divided by 2 and has the original number  $n$  subtracted from it. The final result is  
(A)  $n$       (B)  $y$       (C)  $n + y$       (D)  $\frac{n + y}{2}$       (E)  $\frac{y}{2}$
- 9) Nick charges \$7 for travel costs and then \$10 per hour for babysitting. Which expression always represents the number of dollars that Nick charges for  $y$  hours of babysitting?  
(A)  $10y + 7$       (B)  $y + 7$       (C)  $17y - 7$       (D)  $10y - 7$       (E)  $17y$
- 10) Rosie is saving money. She has \$120 in her account today and will begin saving by making \$30 deposits into her account. If she makes  $m$  such deposits, the expression that best represents the number of dollars in her account is  
(A)  $120 + m$       (B)  $30m$       (C)  $30 + 120m$       (D)  $150m$       (E)  $120 + 30m$

## **ANSWERS AND SOURCES**

- 1)** D, 2007 Cayley (Grade 10), #6
- 2)** B, 2010 Gauss (Grade 8), #3
- 3)** C, 2005 Pascal (Grade 9), #3
- 4)** B, 2019 Gauss (Grade 7), #6
- 5)** D, 2020 Cayley (Grade 10), #2
- 6)** C, 2006 Cayley (Grade 10), #4
- 7)** D, 2006 Cayley (Grade 10), #14
- 8)** E, 2007 Gauss (Grade 8), #18
- 9)** A, 2011 Gauss (Grade 8), #12
- 10)** E, 2020 Gauss (Grade 7), #17