

**F.IF.A.2: Evaluating Functions 1a**

- 1 The height of a golf ball hit into the air is modeled by the equation  $h = -16t^2 + 48t$ , where  $h$  represents the height, in feet, and  $t$  represents the number of seconds that have passed since the ball was hit. What is the height of the ball after 2 seconds?
  - 1) 16 ft
  - 2) 32 ft
  - 3) 64 ft
  - 4) 80 ft
  
- 2 The equation  $P = 0.0089t^2 + 1.1149t + 78.4491$  models the United States population,  $P$ , in millions since 1900. If  $t$  represents the number of years after 1900, then what is the estimated population in 2025 to the *nearest tenth of a million*?
  - 1) 217.8
  - 2) 219.0
  - 3) 343.9
  - 4) 356.9
  
- 3 For a recently released movie, the function  $y = 119.67(0.61)^x$  models the revenue earned,  $y$ , in millions of dollars each week,  $x$ , for several weeks after its release. Based on the equation, how much more money, in millions of dollars, was earned in revenue for week 3 than for week 5?
  - 1) 37.27
  - 2) 27.16
  - 3) 17.06
  - 4) 10.11
  
- 4 The value,  $y$ , of a \$15,000 investment over  $x$  years is represented by the equation  $y = 15000(1.2)^{\frac{x}{3}}$ . What is the profit (interest) on a 6-year investment?
  - 1) \$6,600
  - 2) \$10,799
  - 3) \$21,600
  - 4) \$25,799
  
- 5 Kathy deposits \$25 into an investment account with an annual rate of 5%, compounded annually. The amount in her account can be determined by the formula  $A = P(1 + R)^t$ , where  $P$  is the amount deposited,  $R$  is the annual interest rate, and  $t$  is the number of years the money is invested. If she makes no other deposits or withdrawals, how much money will be in her account at the end of 15 years?
  - 1) \$25.75
  - 2) \$43.75
  - 3) \$51.97
  - 4) \$393.97
  
- 6 If \$5000 is invested at a rate of 3% interest compounded quarterly, what is the value of the investment in 5 years? (Use the formula  $A = P\left(1 + \frac{r}{n}\right)^{nt}$ , where  $A$  is the amount accrued,  $P$  is the principal,  $r$  is the interest rate,  $n$  is the number of times per year the money is compounded, and  $t$  is the length of time, in years.)
  - 1) \$5190.33
  - 2) \$5796.37
  - 3) \$5805.92
  - 4) \$5808.08

- 7 Yusef deposits \$50 into a savings account that pays 3.25% interest compounded quarterly. The amount,  $A$ , in his account can be determined by the formula

$$A = P \left( 1 + \frac{r}{n} \right)^{nt}, \text{ where } P \text{ is the initial amount}$$

invested,  $r$  is the interest rate,  $n$  is the number of times per year the money is compounded, and  $t$  is the number of years for which the money is invested. What will his investment be worth in 12 years if he makes no other deposits or withdrawals?

- 1) \$55.10
  - 2) \$73.73
  - 3) \$232.11
  - 4) \$619.74
- 8 The Franklins inherited \$3,500, which they want to invest for their child's future college expenses. If they invest it at 8.25% with interest compounded monthly, determine the value of the account, in dollars, after 5 years. Use the formula

$$A = P \left( 1 + \frac{r}{n} \right)^{nt}, \text{ where } A = \text{value of the investment}$$

after  $t$  years,  $P$  = principal invested,  $r$  = annual interest rate, and  $n$  = number of times compounded per year.

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### Answer Section

1 ANS: 2

$$h = -16(2)^2 + 48(2) = -64 + 96 = 32$$

REF: 080508a

2 ANS: 4

$$P = 0.0089(125)^2 + 1.1149(125) + 78.4491 \approx 356.9$$

REF: 061422ia

3 ANS: 3

$$119.67(0.61)^5 - 119.67(0.61)^3 \approx 17.06$$

REF: 011603ai

4 ANS: 1

$$15000(1.2)^{\frac{6}{3}} = 21,600. \quad 21,600 - 15,000 = 6,600$$

REF: 061030ia

5 ANS: 3

$$A = P(1 + R)^t = 25(1 + .05)^{15} \approx 51.97$$

REF: 060803b

6 ANS: 3

$$5000 \left( 1 + \frac{.03}{4} \right)^{4 \cdot 5} = 5000(1.0075)^{20} \approx 5805.92$$

REF: 011410a2

7 ANS: 2

$$A = 50 \left( 1 + \frac{.0325}{4} \right)^{4 \cdot 12} = 50(1.008125)^{48} \approx 73.73$$

REF: 081511a2

8 ANS:

$$\$5,279.61. \quad A = P \left( 1 + \frac{r}{n} \right)^{nt} = 3500 \left( 1 + \frac{.0825}{12} \right)^{12 \cdot 5} \approx 5279.61$$

REF: 080224b