Name _____ Date _____

Interpreting Slope and Intercept in Context

Directions: Each question gives a linear model and says what each variable stands for, with units. When a model has a stated range of inputs, use it only inside that range.

1. A gym's total cost is modeled by $C = 25m + 40$, where C is the total cost in dollars and m is the number of months of membership. What does the 25 mean in this model?

A. A membership lasts 25 months.

B. Each month of membership costs $65.

C. The gym charges a one-time fee of $25.

D. The total cost goes up by $25 for each month of membership.

2. The model $T = -3h + 68$ gives the temperature T, in degrees Fahrenheit, h hours after 6 p.m. one evening, for $0 \le h \le 8$. What does the 68 mean?

A. At 6 p.m., the model gives a temperature of 68°F.

B. The temperature drops 68°F each hour.

C. After 68 hours, the temperature is 0°F.

D. The temperature drops 3°F every 68 hours.

3. On a trip away from home, Maya leaves a rest stop and keeps driving away from home. The model $D = 55t + 20$ gives her distance from home, D miles, t hours after she leaves the rest stop, for $0 \le t \le 3$. What are the units of the 55?

A. Hours per mile B. Hours C. Miles D. Miles per hour

4. A plant's height is modeled by $P = 1.5w + 4$, where P is the height in centimeters and w is the number of weeks after planting, for $0 \le w \le 10$. What height does the model give at 6 weeks?

_____ cm

5. Rina's savings are modeled by $S = 12d + 40$, where S is her savings in dollars and d is the number of days since she started a summer job, for $0 \le d \le 30$. The model gives $S = 100$ when $d = 5$. What does this mean?

A. Rina's savings first reach $100 ten days after she starts the job.

B. According to the model, Rina has $100 saved five days after she started the job.

C. After 100 days, Rina has $5 saved.

D. Rina saves $100 each day for 5 days.

6. A taxi company's fare model is $F = 2.5m + 4$, where F is the fare in dollars and m is the number of miles driven. The company raises its starting charge but keeps the same price per mile. Which number in the model changes?

A. Both numbers, because the fare goes up.

B. The 4, because it is the part of the fare that does not depend on the miles.

C. Neither number, because only m changes.

D. The 2.5, because it is the starting charge.

7. A phone's battery charge is modeled by $B = -8h + 100$, where B is the percent of charge left and h is the number of hours since the phone was unplugged, for $0 \le h \le 12$. After how many hours does the model give 36% of the charge left?

_____ hours

8. A car's value is modeled by $V = -2{,}000t + 22{,}000$, where V is the value in dollars and t is the number of years since the car was bought, for $0 \le t \le 10$. What does the $-2{,}000$ mean?

A. The model has the car losing \$22,000 of value each year.

B. The model has the car gaining \$2,000 of value each year.

C. The model has the car losing \$2,000 of value each year.

D. The car is worth \$2,000 after one year.

9. A model for a typical child's height is $H = 2.5a + 29$, where H is the height in inches and a is the age in years, for ages 2 to 12. What does the model say about a child's height at age 0?

A. A newborn baby is 2.5 inches long.

B. A newborn baby is 29 inches long.

C. Children grow 29 inches each year.

D. Nothing, because the model is only for ages 2 to 12.

10. For which of these models is the intercept an output that the model gives, because an input of 0 is inside its stated range? Select the three correct models.

☐ A. $D = -4m + 60$: the depth D, in inches, of water in a tank m minutes after it starts draining, for $0 \le m \le 15$

☐ B. $L = 0.2d + 4$: the length L, in centimeters, of a seedling d days after it sprouts, for $5 \le d \le 30$

☐ C. $C = 3n + 12$: the cost C, in dollars, of a party for n guests, for $n = 0$ to 20

☐ D. $R = -15v + 120$: the dollars R left on a gift card after v visits to a cafe, for $v = 0$ to 8

☐ E. $W = 0.5x + 6$: the weight W, in pounds, of a puppy x weeks old, for $8 \le x \le 20$