Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

***Variables and Patterns***

**Investigation 3.3**

***ACE***

 Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Hour \_\_\_\_

**For Exercises 6–8, use the equation to complete the table.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| ***x*** | 1 | 2 | 5 | 10 | 20 |  |
| ***y*** |  |  |  |  |  | 203 |

**6.** *y* = 4*x* + 3

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| ***k*** | 1 | 2 | 5 | 10 | 20 |  |
| ***m*** |  |  |  |  |  | 50 |

**7.** *m* = 100 − *k*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| ***t*** | 1 | 2 | 5 | 10 | 20 |  |
| ***d*** |  |  |  |  |  | 140 |

**8.** *d* = 3.5*t*

**For Exercises 10–13, express each rule with an equation. Use single letters to stand for the variables. Identify what each letter represents.**

**10.** The area of a rectangle is its length multiplied by its width. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**11.** The number of hot dogs needed for a picnic is two for each student. \_\_\_\_\_\_\_\_\_\_\_\_\_\_

**12.** The amount of material needed to make curtains is

4 square yards per window. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**13.** Taxi fare is $2.00 plus $1.10 per mile. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**14.** The sales tax in a state is 8%. Write an equation for the

amount of tax *t* on an item that costs *d* dollars. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**15.** Potatoes sell for $.25 per pound at the produce market.

Write an equation for the cost *c* of *p* pounds of potatoes. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**16.** A cellphone family plan costs $49 per month plus $.05 per text.
Write an equation for the monthly bill *b* when *t* texts are sent. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**For Exercises 17–19, describe the relationship between the variables with an equation.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| ***x*** | 0 | 1 | 2 | 5 | 10 | 20 |
| ***y*** | 0 | 4 | 8 | 20 | 40 | 80 |

**17.**

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| ***s*** | 0 | 1 | 2 | 3 | 6 | 12 |
| ***t*** | 50 | 49 | 48 | 47 | 44 | 38 |

**18.**

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| ***n*** | 0 | 1 | 2 | 3 | 4 | 5 |
| ***z*** | 1 | 6 | 11 | 16 | 21 | 26 |

**19.**

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 **20. Multiple Choice** Which equation describes the relationship in the table?

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ***n*** | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| ***C*** | 10 | 20 | 30 | 40 | 50 | 60 | 70 |

**A.** *C* = 10*n* **B.** *C* = 10 + *n* **C.** *C* = 10 **D.** *C* = 10 + 10*n*

**For Exercises 31 and 32, complete the table of values for the given equation.**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***x*** |  |  |  |  |  |  |  | 5 |
| ***y*** |  |  |  |  |  |  |  |  |

**31.** *y* = *x* +

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***x*** |  |  |  |  |  |  |  | 5 |
| ***y*** |  |  |  |  |  |  |  |  |

**32.** *y* = *x*

**For Exercises 33–35, describe in words the relationship between** *x* **and** *y***.**



**33.**

**34.**

**35.**