Name:

***All the questions on this page refer to the following four functions:***

**f(x) = x +1** **x(f) = $f^2$**

**g(y)=2y-5** **p(u, v) = 2u+3v**

---

**1. What is the value of f(2)? (circle one)**

0 1 2 3

---

**2. What is the value of x(5)? (circle one)**

10 25 36 Can't be evaluated

---

**3. What is the value of g(0)? (circle one)**

0 -5 15 25

---

**4. What is the value of p(1, 2)? (circle one)**

21+32 8 3 22+31

---

**5. What is the value of f(2+3)? (circle one)**

5 6 7 8

---

**6. What is the value of g(f(3))? (circle one)**

3 9 11 Can't be evaluated

---

**7. What is the value of x(f(2))? (circle one)**

9 16 25 Can't be evaluated

---

**8. What is the value of p(1, f(3))? (circle one)**

14 16 18 20

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**9. The formula below explains the relationship between the number of girls and boys in a classroom. Can you explain this relationship in your own words?**

$b(g) = 2g$

_____

_____

_____

**10. The table below shows the relationship between a weight of a crystal and the value of the crystal. Can you explain this relationship in your own words?**

| Weight | Cost(weight) |
|---|---|
| 2 grams | $14 |
| 3 grams | $19 |
| 4 grams | $26 |

_____

_____

_____

**11. The formula below shows the altitude of a rocket during its flight. Can you describe the relationship in your own words?**

$$h(t) = -t^2 + 200$$

_____

_____

_____

**12. The table below shows the amount of time needed to heat slices of pizza in an oven. Can you describe the relationship in your own words?**

| Slices | Time(slices) |
|---|---|
| 1 slice | 3 minutes |
| 2 slices | 4 minutes |
| 3 slices | 5 minutes |

_____

_____

_____

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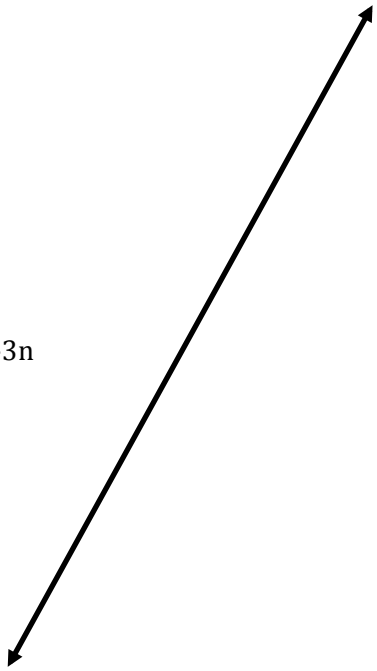
**Match each of the formulas below with the corresponding table. (One of the matches has been done for you.)**

$m(n) = n^2 - 10$

| n | $m(n)$ |
|---|---|
| 10 | 56 |
| 11 | 60 |
| 12 | 64 |

$m(n) = n^2 - 2n$

| n | $m(n)$ |
|---|---|
| -4 | 16 |
| -6 | 36 |
| -8 | 64 |



$m(n) = 8 - 3n$

| n | $m(n)$ |
|---|---|
| 0 | -10 |
| 1 | -9 |
| 2 | -6 |

$m(n) = n^2$

| n | $m(n)$ |
|---|---|
| 5 | 15 |
| 6 | 24 |
| 7 | 35 |

$m(n) = 4n + 16$

| n | $m(n)$ |
|---|---|
| 2 | 2 |
| 4 | -4 |
| 6 | -10 |

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**13. The label on the can of paint that Chang bought stated that 1 gallon of paint will cover 300 square feet. The function *feet*(g) represents the number of square feet that g gallons will cover.**

*a. What are the domain and range of feet?*

*domain* : _____ range: _____

*b. Fill in the output column for the function feet(g), completing the two examples provided to show how the number of square feet that can be painted relates to the number of gallons provided.*

| | |
|---|---|
| *f*(2) | |
| *f*(3) | |

*c. Write the function* `feet(g),` *that represents the number of feet that g gallons will cover.*

*feet*(g) = _____

**14. The total for a phone bill, *t*(m), starts at $19, plus an additional $0.25 per minute *m* of use.**

*a. What are the domain and range of t?*

*domain* : _____ range: _____

*b. Make a table for the function t(m), that shows how the total bill is related to the number of minutes of use.*

| | |
|---|---|
| | |
| | |

*c. Which of the following equations can be used to determine the total monthly bill, t, for m minutes of use? (circle one)*

$t(m) = 0.25m + 19$ $t(m)=0.25m - 19$ $t(m) = 19m + 0.25$ $t(m) = 19m - 0.25$

**15. The table below shows a relationship between values of *x* and *f*(*x*):**

| **x** | 1 | 2 | 3 | 4 | 5 | … |
|---|---|---|---|---|---|---|
| ***f*(x)** | 3 | 6 | 11 | 18 | 27 | … |

*a. What are the domain and range of f?*

*domain* : _____ range: _____

*b. Fill in the output column for the function f(x), completing the two examples provided.*

| | |
|---|---|
| *f*(4) | |
| *f*(6) | |

*c. Which of the following equations describes the relationship between x and f(x) in the table? (circle one)*

$f(x) = 3x$ $f(x) = 5x-2$ $f(x) = x^2+2$ $f(x) = x^3$

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**16. Ashley studied for one hour less than twice as many hours as Melissa studied. Let *m* stand for the number of hours Melissa studied. The function *a*(m) represents the number of hours Ashley studied.**

*a. What are the domain and range of a?*

*domain* : _____ range: _____

*b. Make a table for the function a(m), that shows how the number of hours Ashley studied is related to the number of hours that Melissa studied.*

| | |
|---|---|
| | |

*c. Which of the following equations describes the relationship between m and a(m)? (circle one)*

$a(m) = \frac{1}{2}m - 1$ $a(m) = 1 - \frac{1}{2}m$ $a(m) = 1 - 2m$ $a(m) = 2m-1$

**17. A university has 6 times as many students as professors. Write a function *p*(s) that describes the number of professors in relation to the number of students *s*.**

*a. What are the domain and range of p?*

*domain* : _____ range: _____

*b. Fill in the output column for the function p(s), completing the two examples provided to show how the number of professors is related to the number of students at the university.*

| | |
|---|---|
| $p(60)$ | |
| $p(180)$ | |

*c. Write the function* `p(s),` *which represents the number of professors at a university with* s *students*.

$p(s)$ = _____

**18. Laila is having shirts made with a logo printed on them to promote her band. The total cost is a one-time fee of $75 to have the logo designed, plus $8 per shirt to print the logo. Write an equation that Laila can use to determine the total cost *C*(x), in dollars, to make *x* shirts.**

*a. What are the domain and range of C?*

*domain* : _____ range: _____

*b. Make a table for the function C(x), that shows how the cost is related to the number of shirts printed.*

| | |
|---|---|
| | |

*c. Write the function* `C(x),` *that represents the cost to make x shirts*.

$C(x)$ = _____

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**19. Ms. Gleason is opening a new restaurant. She has enough booths to seat up to 40 people, and is ordering tables to fill the rest of the seating space. Each of these tables can seat up to 6 people. If *t* represents the number of tables Ms. Gleason orders, write a function *p*(t), which shows the number of people *p* that can be seated at booths and tables.**

*a. What are the domain and range of p?*

*domain* : _____ range: _____

*b. Make a table for the function p(t), that shows how the number of tables is related to the number of people that can be seated at the restaurant.*

| | |
|---|---|
| | |

*c. Write the function* `p(t),` *that represents the number of people that can be seated at tables and booths.*

$p(t)$ = _____

**20. Jeff completed a hiking trail in *t* hours. Michelle completed the trail in half the time it took Jeff to complete it. A function m(*t*) represents the time it took Michelle to complete the trail compared to Jeff.**

*a. What are the domain and range of m?*

*domain* : _____ range: _____

*b. Fill in the output column for the function m(t), completing the two examples provided to show how the number of hours it took Michelle compared to Jeff.*

| | |
|---|---|
| $m(10)$ | |
| $m(20)$ | |

*c. Which of the following equations describes the relationship between t and* m*(t)? (circle one)*

$m(t) = 2 \times t$ $m(t) = 2 \div t$ $m(t) = t - 2$ $m(t) = t \div 2$

**21. There are twice as many cats at a pet store as there are dogs. Write a function *d*(c), which describes the number of dogs based on how many cats *c* there are.**

*a. What are the domain and range of d?*

*domain* : _____ range: _____

*b. Make a table for the function d(c), that shows how the number of dogs is related to the number of cats at the pet store.*

| | |
|---|---|
| | |

*c. Write the function* `d(c),` *which represents the number of dogs at a pet store with* c *cats.*

$d(c)$ = _____