$\qquad$ Block $\qquad$

1. A number of apples were shared evenly among 4 students. Each student was also given 2 pears. Each student received a total of 6 pieces of fruit. Let a represent the total number of apples. Which equation can be used to find the total number of apples?
a) $a / 4-2=6$
b) $a / 4+2=6$
c) $4 a+2=6$
d) $4 a-2=6$
2. A tour bus driver takes home $75 \%$ of the salary he earns and gives $60 \%$ of his tips to the tour guides on the bus. He took home $\$ 980$ last week from salary and tips. Let $s$ represent the driver's salary and $t$ represent the total amount of tips the driver earns. Which equation can be used to find the possible amounts of his salary and tips the driver took home last week?
a) $0.75 \mathrm{~s}+0.4 \mathrm{t}=980$
b) $0.75 \mathrm{~s}-0.4 \mathrm{t}=980$
c) $0.75 \mathrm{~s}+0.04 \mathrm{t}=980$
d) $0.75 \mathrm{~s}-0.04 \mathrm{t}=980$
3. Nicole gets paid $\$ 120$ each week and $\$ 35$ for every iPhone that she sells. Which of the following equations represents her weekly income?
a) $y=120 x+35$
b) $y=120+35 x$
c) $y=-35 x+120$
d) $y=35 x-120$
4. Which BEST describes the system?

$$
\begin{aligned}
& -3 x+y=12 \\
& y=3 x-2
\end{aligned}
$$

a) The system cannot be solved
b) One solution; lines intersect
c) Two solutions; lines are parallel
d) No solution; lines are parallel
5. Solve the equation for $y$.

$$
2 x-4 y=4
$$

a) $y=2 x-2$
b) $y=1 / 2 x-1$
c) $y=1 / 2 x+2$
d) $y=x-2$

| $4 x+5-x=20$ | Original Equation |
| :---: | :---: |
| $4 x-x+5=20$ | Commutative Prop of Addition |
| $3 x+5=20$ | Substitution Property of Equality |
| $3 x=15$ | Subtraction Property of Equality |
| $x=5$ |  |

Which of these properties correctly justifies the missing step in solving the equation above?
a) Distributive Property
b) Commutative Property of Addition
c) Commutative Property of Multiplication
d) Division Property of Equality
7. Solve for $x$ in the following equation:

$$
y=m x+b
$$

a) $x=y-m / b$
b) $x=y / m+b$
c) $x=y+b / m$
d) $x=\frac{y-b}{m}$
8. Solve the inequality $4-5 x<14$.
a) $x<-2$
b) $x>-2$
c) $x<-50$
d) $x>-50$
9. Which of the following would be the first step in solving this system using elimination?

$$
\begin{aligned}
& 2 x+y=11 \\
& x+3 y=-18
\end{aligned}
$$

a) Multiply the second equation by 2
b) Multiply the second equation by -2
c) Multiply the second equation by 3
d) Multiply the second equation by -3
10. What is the solution to the linear system?

$$
\begin{aligned}
& y=-x+7 \\
& -2 x+2 y=6
\end{aligned}
$$

a) $(-2,9)$
c) $(2,5)$
b) $(2,9)$
d) No solution
11. Ed and Greg are working on their math HW. Ed says $(2,0)$ is a solution to $y<4 x-8$. Greg disagrees. Who is correct and why?
$\qquad$ Block $\qquad$
a) Ed is correct because when he plugged $(2,0)$ into the expression it resulted in a true statement, $0=0$.
b) Ed is correct because when he graphed the expression, $(2,0)$ was on the boundary line so it is a solution.
c) Greg is correct because when he plugged (2, 0 ) into the expression it resulted in a false statement $0<0$.
d) Greg is correct because when he graphed the expression, $(2,0)$ was not on the boundary line so it is not a solution.
12. An arithmetic sequence has a common difference of 4 and the $3^{\text {rd }}$ term is 10 . What is the $6^{\text {th }}$ term?
a) 14
b) 22
c) 34
d) 18
13. A function is given a recursive form of $a_{n}=a_{n-1}-3$ with a first term of 25 .
Which function represents the sequence?
a) $f(x)=x-3$
b) $f(x)=25 x-3$
c) $f(x)=-3 x+22$
d) $f(x)=-3 x+28$
14. Which of the following does NOT represent an arithmetic sequence?
a) $3,4,5,6,7$
b) $-1,1,3,5,7$
c) $2,4,8,16$
d) $10,6,2,-2$
15. Given the arithmetic sequence $2,5,8,11, \ldots$ find $a_{n}$.
a) $a_{n}=3 n+1$
b) $a_{n}=3 n-1$
c) $a_{n}=2 n+1$
d) $a_{n}=-3 n+5$
16. Compare the following functions to determine which has a greater rate of change.

$$
\begin{array}{ll}
\text { Function 1: } & \text { Function 2: } \\
\mathbf{y = 3 x + 5} & \begin{array}{|c|c|c|c|}
\hline \mathbf{x} & -\mathbf{- 2} & \mathbf{0} & \mathbf{4} \\
\hline \mathbf{y} & -4 & -\mathbf{2} & \mathbf{2} \\
\hline
\end{array}
\end{array}
$$

a) Function 1
b) Function 2
c) The functions have the same rate of change
d) The function do not have a rate of change
17. What is the solution to the system of equations?
a) $(1,0)$
b) $(0,3)$
c) Infinitely many solutions
d) No solution

18. For the given linear function, what are the intercepts?
a) $(0,6)$ and $(-6,0)$
b) $(5,0)$ and $(-5,0)$
c) $(0,5)$ and $(-5,0)$
d) $(6,0)$ and $(-5,0)$
19. What is the $x$-coordinate at the point of intersection for $f(x)$ and $g(x)$ ?

$$
\begin{aligned}
& f(x)=3 x+50 \\
& g(x)=2 x-18
\end{aligned}
$$

a) -35
b) -68
c) 3
d) 32
20. What is the function notation form of the sequence $4,6,8,10, \ldots$ ?
a) $f(x)=2 x$
b) $f(x)=2 x+2$
c) $f(x)=x+2$
d) $f(x)=4 x+2$
21. If a system of linear equations has infinitely many solutions, what do you know about the graphs of the
$\qquad$ Block $\qquad$

## equations?

a) The graphs coincide
b) The graphs intersect
c) The graphs are parallel
d) The graphs are perpendicular

## 22. Determine the range of the function.

a) $(-2, \infty)$
b) $(-2,0)$
c) $(0,-2)$
d) $(-\infty, \infty)$

23. Describe the end behavior of the function.
a) As $x \rightarrow-\infty, y \rightarrow \infty$ As $x \rightarrow \infty, y \rightarrow \infty$
b) As $x \rightarrow-\infty, y \rightarrow-\infty$ As $x \rightarrow \infty, y \rightarrow-\infty$
c) As $x \rightarrow-\infty, y \rightarrow-\infty$ As $x \rightarrow \infty, y \rightarrow \infty$
d) As $x \rightarrow-\infty, y \rightarrow \infty$
 As $x \rightarrow \infty, y \rightarrow-\infty$
24. A shop sells one-pound bags of peanuts for $\$ 2$ and three-pound bags of peanuts for $\$ 5$. If 9 bags are purchased for a total cost of $\$ 36$, how many 3 pound bags were purchased?
a) 3
b) 9
c) 6
d) 18
25. Which ordered pair is a solution of

$$
3 y+2=2 x-5 ?
$$

a) $(-5,2)$
b) $(0,-5)$
c) $(7,5)$
d) $(5,1)$
26. Look at the steps used when solving $3(x-2)=3$ for $x$.

$$
\begin{aligned}
3(x-2) & =3 & & \text { Write the original equation. } \\
3 x-6 & =3 & & \text { Use the Distributive Property. } \\
3 x-6+6 & =3+6 & & \text { Step 1 } \\
3 x & =9 & & \text { Step 2 } \\
\frac{3 x}{3} & =\frac{9}{3} & & \text { Step 3 } \\
x & =3 & & \text { Step 4 }
\end{aligned}
$$

Which step is the result of combining like terms?
a) Step 1
c) Step 3
b) Step 2
d) Step 4
27.Use the functions to answer this question:

$$
\begin{aligned}
& P(x)=x^{2}-x-6 \\
& Q(x)=x-3
\end{aligned}
$$

What is $P(x)-Q(x)$ ?
a) $x^{2}-3$
b) $x^{2}-9$
c) $x^{2}-2 x-3$
d) $x^{2}-2 x-9$
28. Two lines are graphed on this coordinate plane. What point appears to be a solution of the equations of both lines?
a) $(0,-2)$
b) $(0,4)$
c) $(2,0)$
d) $(3,1)$

29. Consider the system

$$
\begin{gathered}
2 x+y=-1 \\
4 x-y=-11
\end{gathered}
$$

What is the x -value of the solution?
a) $x=1$
b) $x=-1$
c) $x=-2$
d) $x=3$
30. If $f(12)=4(12)-20$, which function gives $f(x)$ ?
a) $f(x)=4 x$
b) $f(x)=12 x$
c) $f(x)=4 x-20$
d) $f(x)=12 x-20$
$\qquad$ Block $\qquad$

| $\boldsymbol{n}$ | 1 | 2 | 3 | 4 | 5 | $\ldots$ |
| :---: | ---: | ---: | ---: | ---: | ---: | :---: |
| $\boldsymbol{a}$ | 3 | 10 | 17 | 24 | 31 | $\ldots$ |

a) $f(n)=n+3$
b) $f(n)=7 n-4$
c) $f(n)=3 n+7$
d) $f(n)=n+7$
32. Based on the tables, at what point do the lines $y=-x+5$ and $y=2 x-1$ intersect?
a) $(1,1)$
b) $(3,5)$
c) $(2,3)$
d) $(3,2)$

| $y=-x+5$ |  |
| :---: | :---: |
| $x$ | $y$ |
| -1 | 6 |
| 0 | 5 |
| 1 | 4 |
| 2 | 3 |
| 3 | 2 |


| $y=\mathbf{2 x}-\mathbf{1}$ |  |
| :---: | ---: |
| $x$ | $y$ |
| -1 | -3 |
| 0 | -1 |
| 1 | 1 |
| 2 | 3 |
| 3 | 5 |

33. Look at the tables of values for two linear functions, $f(x)$ and $g(x)$. What is the solution to $f(x)$ $=\mathrm{g}(\mathrm{x})$ ?
a) $x=3$
b) $x=7$
c) $x=5$
d) $x=1$

| $x$ | $f(x)$ |
| ---: | ---: |
| -1 | 16 |
| 0 | 7 |
| 1 | 4 |
| 3 | -2 |
| 5 | -8 |
| 7 | -14 |


| $x$ | $g(x)$ |
| ---: | ---: |
| -1 | -18 |
| 0 | -14 |
| 1 | -10 |
| 3 | -2 |
| 5 | 6 |
| 7 | 14 |

34. The functions $f(x)=x-9$ is shifted 2 units up and 3 units to the left. Select the new function.
a) $G(x)=2 x-6$
b) $G(x)=(x-3)+7$
c) $G(x)=3 x-7$
d) $G(x)=(x+3)-7$
35. What is the solution to this system of equations?

$$
\begin{aligned}
& x-3 y=1 \\
& x-2 y=6
\end{aligned}
$$

a) $(-4,-5)$
b) $(-2,-1)$
c) $(4,1)$
d) $(16,5)$
$\checkmark$ Company x charges a $\$ 50$ fee plus $\$ 7$ per baseball cap.
$\checkmark$ Company y charges a $\$ 30$ fee plus $\$ 9$ per baseball cap.

For what number of baseball caps will the cost be the same at both companies?
a) 10
b) 20
c) 40
d) 100
37. Which graph represents a system of linear equations that has multiple common coordinate pairs?
A.


в.

D.

38. Look at the sequences in this table.

| $\boldsymbol{n}$ | 1 | 2 | 3 | 4 | 5 | $\ldots$ |
| :--- | ---: | ---: | ---: | ---: | ---: | :--- |
| $\boldsymbol{a}_{\boldsymbol{n}}$ | -1 | 1 | 3 | 5 | 7 | $\ldots$ |

Which function represents the sequence?
a) $a_{n}=a_{n-1}+1$
b) $a_{n}=a_{n-1}+2$
c) $a_{n}=2 a_{n-1}-1$
d) $a_{n}=2 a_{n-1}-3$
39. Which of these is an even function?
a) $\quad f(x)=5 x^{2}-x$
b) $\quad f(x)=3 x^{3}+x$
c) $\quad f(x)=6 x^{2}-8$
d) $f(x)=4 x^{3}+2 x^{2}$
40. Consider this pattern.
$\qquad$ Block $\qquad$


Which function represents the sequence that represents the pattern?
a) $a_{n}=a_{n-1}-3$
b) $a_{n}=a_{n-1}+3$
c) $a_{n}=3 a_{n-1}-3$
d) $a_{n}=3 a_{n-1}+3$
41. If a parent functions if $f(x)=m x+b$, what is the value of the parameter $m$ for the line passing through the points $(-2,7)$ and $(4,3)$ ?
a) -9
b) -2
c) $-3 / 2$
d) $-2 / 3$
42. Which function is modeled in this table?
a) $f(x)=x+7$
b) $f(x)=x+9$
c) $f(x)=2 x+5$
d) $f(x)=3 x+5$

| $\boldsymbol{x}$ | $\boldsymbol{f}(\boldsymbol{x})$ |
| :---: | ---: |
| 1 | 8 |
| 2 | 11 |
| 3 | 14 |
| 4 | 17 |

43. Which explicit formula describes the pattern in this table?
a) $d=3.14 \times \mathrm{C}$
b) $3.14 \times \mathrm{C}=\mathrm{d}$
c) $31.4 \times 10=\mathrm{C}$
d) $C=3.14 \mathrm{xd}$

| $\boldsymbol{c} \boldsymbol{d}$ | $\boldsymbol{c}$ |
| ---: | ---: |
| 2 | 6.28 |
| 3 | 9.42 |
| 5 | 15.70 |
| 10 | 31.40 |

44. A wild horse runs at a rate of 8 miles an hour for 6 hours. Let $y$ be the distance, in miles, the horse travels for a given amount of time, $x$, in hours. This situation can be modeled by a function. Which of these describes the domain of the function?
a) $0 \leq x \leq 6$
b) $0 \leq y \leq 6$
c) $0 \leq x \leq 48$
d) $0 \leq y \leq 48$
$\qquad$ ~
45. Kelly works 8 hours less than three times as much as March works for the week. Which expression represents the number of hours Kelly works in relation to March?
a) $3 m-8$
b) $8-3 \mathrm{~m}$
c) $3(m-8)$
d) $\frac{m-8}{3}$
46. To rent a canoe, the cost is $\$ 3$ for the oars and life preserver, plus $\$ 5$ an hour for the canoe. Which graph models the cost of renting a canoe?




47. Juan and Patti decided to see who could read more books in a month. They began to keep track after Patti had already read 5 books that month. This graph shows the number of books Patti read for the next 10 days and the rate at which she read for the rest of the month.


If Juan does not read any books before day 4 and he starts reading at the same rate as Patti for the rest of the month, how many books will he have to read by day 12 ?
a) 5
b) 10
c) 15
d) 20
$\qquad$ Block $\qquad$
48. Which statement BEST describes the graph of $f(x+6)$ ?
a) The graph of $f(x)$ is shifted up 6 units
b) The graph of $f(x)$ is shifted left 6 units
c) The graph of $f(x)$ is shifted right 6 units
d) The graph of $f(x)$ is shifted down 6 units
49. To rent a carpet cleaner at a hardware store, there is a set fee and an hourly rate. The rental cost, c, can be determined using this equation when the carpet cleaner is rented for $h$ hours.

$$
c=25+3 h
$$

Which of these is the hourly rate?
a) 3
b) 3 h
c) 25
d) 25 h
50. Sandra sells necklaces at a school craft fair. She uses the equation:

$$
P=7.5 n-(2.25 n+15)
$$

to determine her total profit at the fair. Based on this equation, how much does she charge for each necklace?
a) $\$ 2.25$
b) $\$ 7.50$
c) $\$ 15.00$
d) $\$ 17.25$
51. The perimeter of a rectangle is $P=2 w+2 l$ where $w$ is the width and $l$ is the length. Rearrange the formula to find the width $w$ of the rectangular prism.
a) $\mathrm{W}=\mathrm{P}-2 \mathrm{l}$
b) $\mathrm{W}=\frac{P}{4-l}$
c) $\mathrm{W}=2 \mathrm{P}-\mathrm{l}$
d) $\mathrm{W}=\frac{P}{2}-l$
a) $(-\infty, \infty)$
b) $(0,5)$
c) $(0,3)$
d) 3
53. Which one of these is not a function?
A) $(5,3),(6,4),(7,3),(8,4)$
B.


$$
\text { c. } y=3 x^{2}
$$



54. Determine whether the function $f(x)=-3 x^{4}-x^{2}$ is even, odd, orneither.
a) Even
b) Odd
c) Neither
55. Which of the following graphs is odd?
a)

c)

d)

b)

56. For the function $g(n)=3 n-5$ find $g(-2)$.
a) -11
b) -1
c) 1
d) 11

