Algebra I FUNPACK

A.2(A) *determine* the domain and range of a linear function in mathematical problems; *determine* reasonable domain and range values for real-world situations, both continuous and discrete; and *represent* domain and range using inequalities.

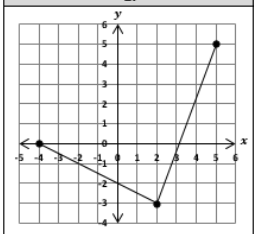
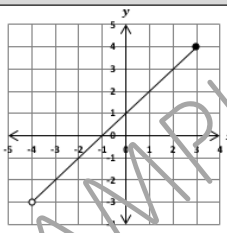
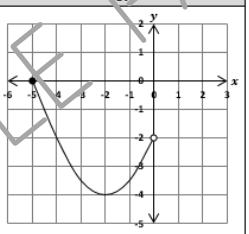
Activity Directions:

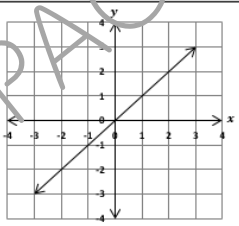
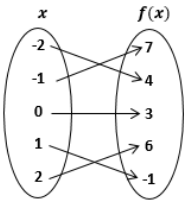
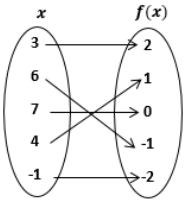
Items Needed: *Domain and Range* activity, scissors, glue

1. Copy the activity for each student or partner group.
2. Students must cut apart the domain and range cards and match to the provided information on the mat. (See below.)
3. Have students practice questions coded to TEKS A.2A.

Name _____ *Domain and Range*

Cut apart the cards and match to the given information. Once all matches are complete, glue in place. Each card will be used exactly one time.

1.	2.	3.
		
Domain: $\{x \mid -4 \leq x \leq 5\}$	**Domain:** $\{x \mid -4 < x \leq 3\}$	**Domain:** $\{x \mid -5 \leq x < 0\}$
Range: $\{y \mid -3 \leq y \leq 5\}$	**Range:** $\{y \mid -3 < y \leq 4\}$	**Range:** $\{y \mid -4 \leq y \leq 0\}$

4.	5.	6.
		
Domain: $\{all\ real\ numbers\}$	**Domain:** $\{-2, -1, 0, 1, 2\}$	**Domain:** $\{-1, 3, 4, 6, 7\}$
Range: $\{all\ real\ numbers\}$	**Range:** $\{-1, 3, 4, 6, 7\}$	**Range:** $\{-2, -1, 0, 1, 2\}$

7.	8.	9.
Carol bought x cartons of eggs for \$1.55 each. She paid with a \$20 bill and received change. If Carol received more than \$4, but less than \$12, which represents the number of cartons of eggs that she bought, or the ***reasonable domain*** of this function?	The total cost of renting an automobile is a function of the number of days the car will be driven. The rental company charges \$4.50 per half-day up to a maximum of one week, plus a \$47 insurance fee. What is the greatest value in the ***range*** for this situation?	The number of school buses, $f(s)$, needed to transport s students in one day can be found using the function $f(s) = \frac{s}{72}$. If there are no more than 2,520 students transported by school bus daily, what is the ***range*** of the function for this situation?
Domain: $6 \leq x \leq 10$	**Range:** $f(x) = \$110.00$	**Range:** $0 \leq y \leq 35$

Name _____ *Domain and Range*

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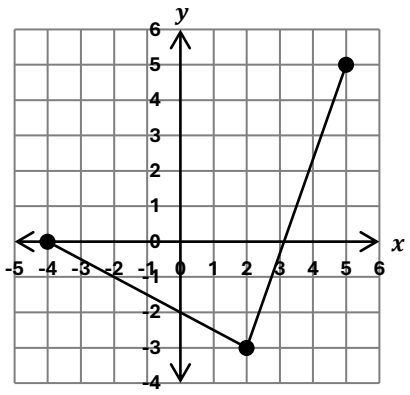
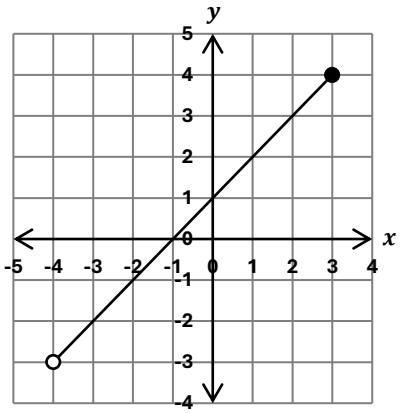
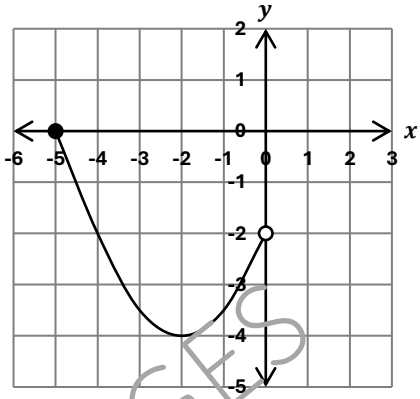
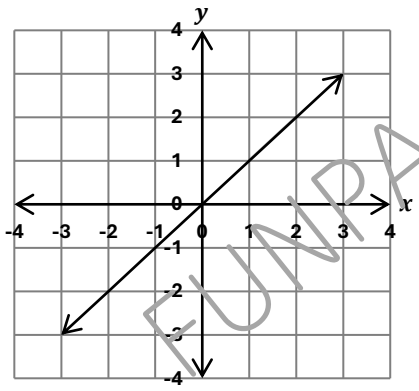
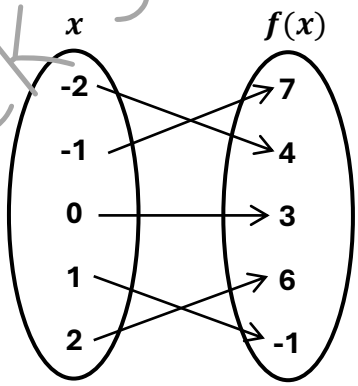
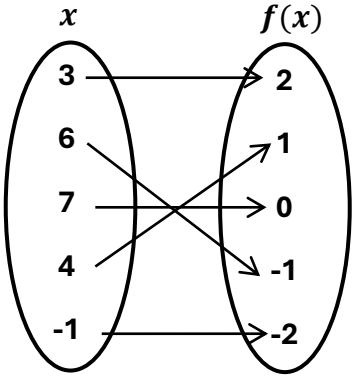
1.	2.	3.
		
(glue)	(glue)	(glue)
(glue)	(glue)	(glue)

4.	5.	6.
		
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(glue)	(glue)	(glue)

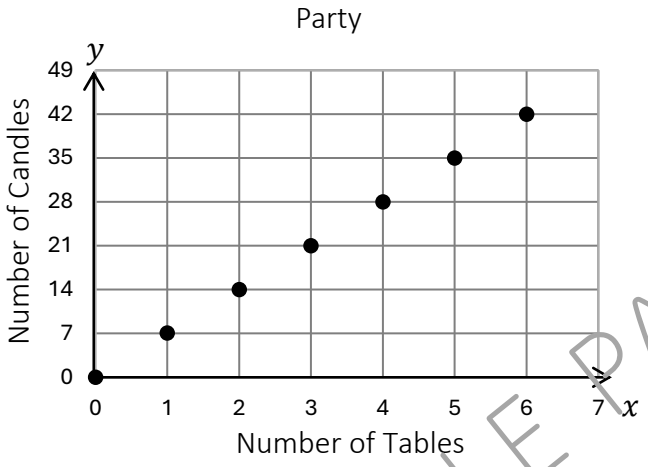
Cut apart the cards and match to the given situations.

Domain: $\{x \mid -5 \leq x < 0\}$	Domain: $\{-2, -1, 0, 1, 2\}$	Domain: $\{x \mid -4 < x \leq 3\}$
Domain: $6 \leq x \leq 10$	Domain: $\{x \mid -4 \leq x \leq 5\}$	Domain: $\{all\ real\ numbers\}$
Domain: $\{-1, 3, 4, 6, 7\}$	Range: $\{all\ real\ numbers\}$	Range: $\{y \mid -3 \leq y \leq 5\}$
Range: $0 \leq y \leq 35$	Range: $f(x) = \$110.00$	Range: $\{y \mid -4 \leq y \leq 0\}$
Range: $\{-1, 3, 4, 6, 7\}$	Range: $\{y \mid -3 < y \leq 4\}$	Range: $\{-2, -1, 0, 1, 2\}$

Name _____ Date _____

TEKS A.2(A) *Determine* the domain and range of a linear function in mathematical problems; *determine* reasonable domain and range values for real-world situations, both continuous and discrete; and *represent* domain and range using inequalities.

1. A party planner is making table centerpieces of candles for a party. Each centerpiece will have 7 candles. The graph shows the linear relationship between y, the number of candles used, and x, the number of centerpieces.



The party planner will decorate up to 6 tables for the party. Which set best represents the range of the function for this situation?

Ⓐ $\{7\}$

Ⓑ $\{0, 1, 2, 3, 4, 5, 6\}$

Ⓒ $\{0, 7, 14, 21, 28, 35, 42\}$

Ⓓ $\{0, 6, 7, 42\}$

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2. What is the domain and range of $f(x) = 13$?

Ⓐ Domain: all real numbers greater than or equal to 13; Range: all real numbers

Ⓑ Domain: all real numbers; Range: all real numbers greater than or equal to 13

Ⓒ Domain: $\{13\}$; Range: all real numbers

Ⓓ Domain: all real numbers; Range $\{13\}$

3. Which statements about the linear parent function are true?
Select TWO correct answers.

☐ The domain is the set of all non-negative numbers.

☐ The domain is the set of all real numbers.

☐ The domain is the set of all negative rational numbers.

☐ The range is the set of ordered pairs graphed in Quadrants I and IV.

☐ The range is the set of all real numbers.

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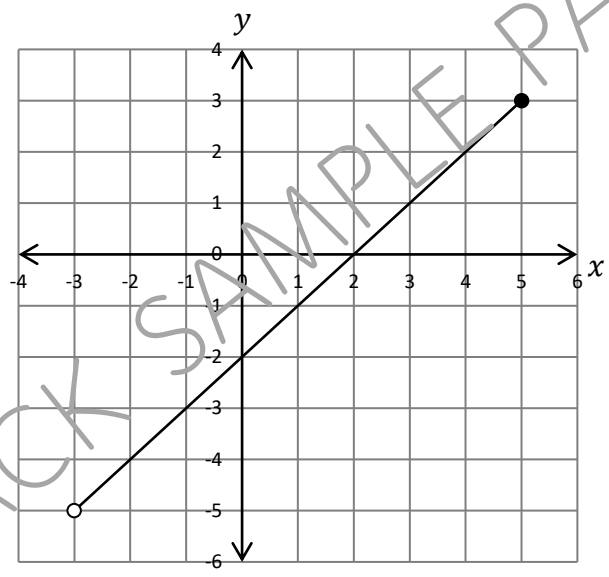
4. Function f is graphed below.



Which inequality best represents the domain of function f?

Ⓐ $-3 \leq x < 5$

Ⓑ $-3 < x \leq 5$

Ⓒ $-5 < y \leq 3$

Ⓓ $-5 \leq y < 3$

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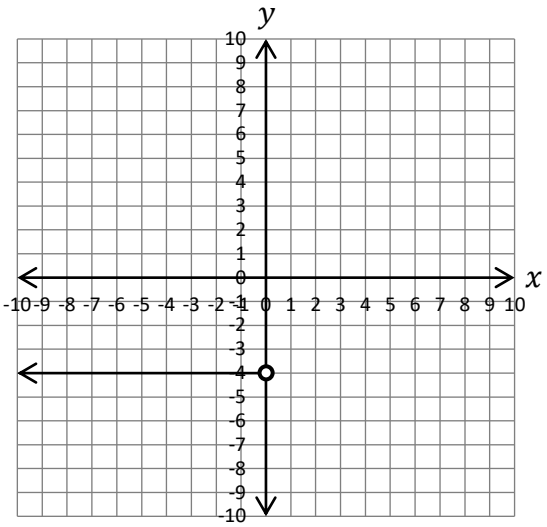
5. The total cost of hiring Paul the plumber is a function of the required number of hours needed to complete the repair. Paul charges $40 per hour up to a maximum of 8 hours, plus a $75 service charge. What is the greatest value in the range for this situation?

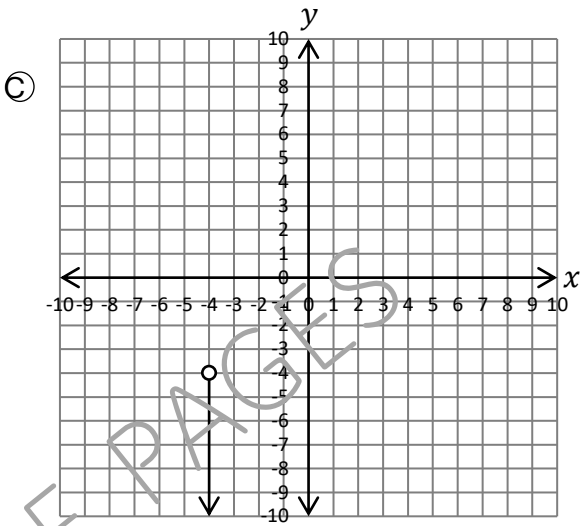
Enter your answer in the box below.

6. Which graph shows a function with a domain of all real numbers less than −4?

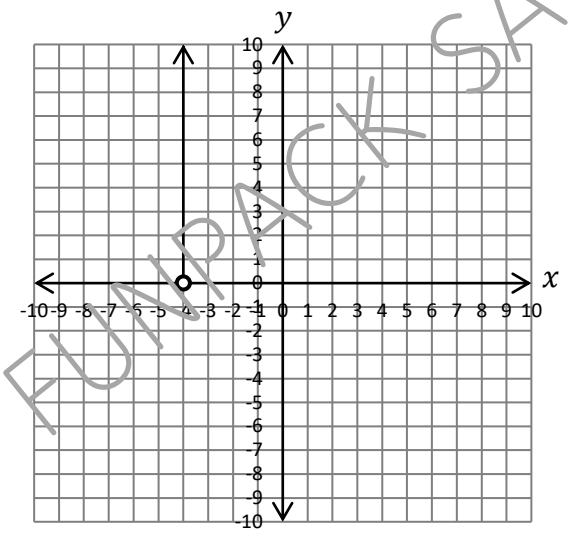
Ⓐ



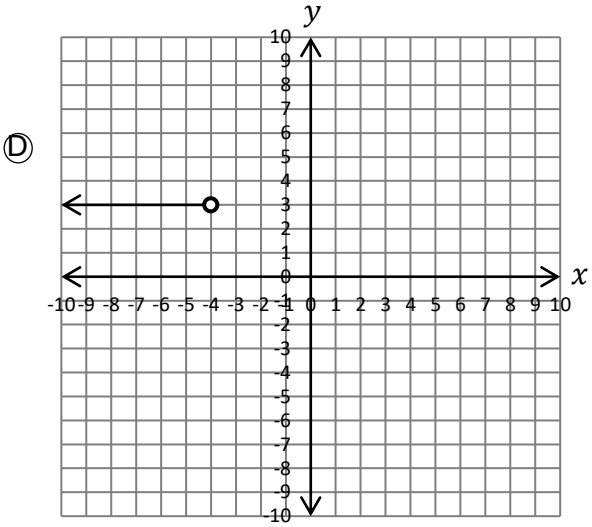
Ⓒ



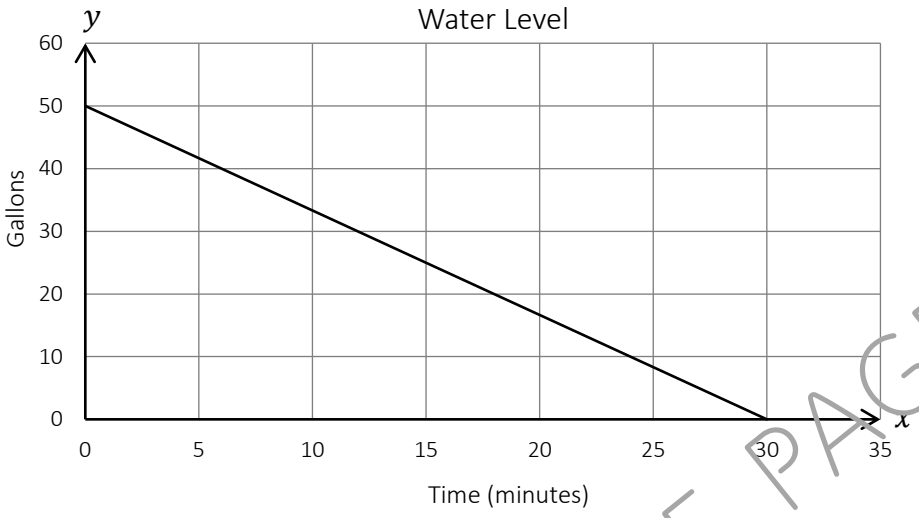
Ⓑ



Ⓓ



7. A rancher is draining a 50-gallon water tank. The graph shows the number of gallons of water remaining in the tank as a linear function of x, the time in minutes.



What is the range for the situation?

Ⓐ $0 \leq y \leq 50$

Ⓑ $0 < x \leq 30$

Ⓒ $0 \leq y \leq 30$

Ⓓ $30 < y \leq 50$

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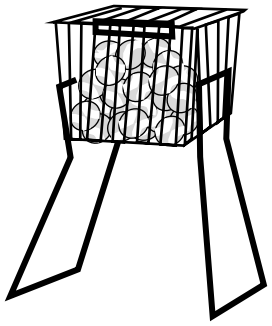
8. The number of ball hoppers, $f(t)$, needed to hold tennis balls for a tournament can be found using the function $f(t) = \frac{t}{25}$. If there are no more than 1,800 tennis balls placed in hoppers at the tournament, what is the range of the function for this situation?



Ⓐ The set of all integers greater than 1,800

Ⓑ The set of all integers from 0 to 1,800

Ⓒ The set of all integers greater than or equal to 24

Ⓓ The set of all integers from 0 to 24

9. A freight elevator can carry a maximum cargo weight of 100,000 pounds. A convention center uses one of these elevators to move 2,500-pound containers. The total cargo weight is a function of the number of containers in the freight elevator. What is the greatest value in the domain for this situation?

Enter your answer in the box below.

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10. Marcello is saving money to buy a computer that costs $1020. He has $100 in his savings account and will make monthly deposits of $115 until he has the total balance needed for the computer. The function $f(x) = 100 + 115x$ models the situation, where $f(x)$ represents the savings balance in dollars after Marcello has made x monthly deposits.

Which statements are true about the domain and range of the function for this situation?

Select TWO correct answers.

- ☐ The domain of the function is the set of all integers.
- ☐ The domain of the function is $\{0, 1, 2, 3, 4, 5, 6, 7, 8\}$.
- ☐ The domain of the function is $\{100, 215, 330, 445, 560, 675, 790, 905, 1020\}$.
- ☐ The range of the function is the set of all integers.
- ☐ The range of the function is $\{0, 1, 2, 3, 4, 5, 6, 7, 8\}$.
- ☐ The range of the function is $\{100, 215, 330, 445, 560, 675, 790, 905, 1020\}$.