Key

Math I EOC Calculator Inactive Review

1. Alex walked 1 mile in 15 minutes. Sally walked 3,520 yards in 24 minutes. In miles per hour, how much faster did Sally walk than Alex? (Note: 1 mile = 1,760 yards)

Alex $\frac{1 \text{ mile}}{15 \text{ min}} \cdot \frac{60 \text{ min}}{1 \text{ hr}} = \frac{60 \text{ miles}}{15 \text{ hrs}} = 4 \text{ mph}$

Sally $\frac{3{,}520 \text{ yd}}{24 \text{ min}} \cdot \frac{1 \text{ mile}}{1760 \text{ yd}} \cdot \frac{60 \text{ min}}{1 \text{ hour}}$

$= \frac{1760}{1} \cdot \frac{1}{1760} \cdot \frac{5 \text{ min}}{1} = 5 \text{ mph}$

2. If a horse can run at 35 miles per hour, how fast is the horse running in feet per second?

$\frac{35 \text{ miles}}{1 \text{ hr}} \cdot \frac{5{,}280 \text{ ft}}{1 \text{ miles}} \cdot \frac{1 \text{ hr}}{60 \text{ min}} \cdot \frac{1 \text{ min}}{60 \text{ sec}} = \frac{7 \cdot 88}{12} = \frac{616}{12} = \frac{308}{6} = \frac{154}{3}$

$\frac{5{,}280}{60} = \frac{88}{1}$ $\quad \frac{35}{60} = \frac{7}{12}$ $\quad 88 \times 7 = 616$

3. What is the sum of the zeros of the function $f(x) = x^2 - 6x + 8$?

$(x-4)(x-2) = 0$

$x = 4, 2$

6

#7-9 looking for x-1, pull out GCF, factor and use positive answer

4. Which expression is equivalent to $t^2 - 36$?

A. $(t-6)(t-6)$
B. $(t+6)(t-6)$
C. $(t-12)(t-3)$
D. $(t-12)(t+3)$

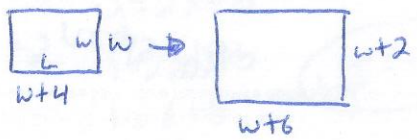
$(t+6)(t-6)$

$t^2 + 6t - 6t - 36$

$t^2 - 36$

5. The floor of a rectangular cage has a length 4 feet greater than the width, w. James will increase both dimensions of the floor by 2 feet. Which equation represents the new area, N, of the floor of the cage?

A. $N = w^2 + 4w$
B. $N = w^2 + 6w$
C. $N = w^2 + 6w + 8$
D. $N = w^2 + 8w + 12$

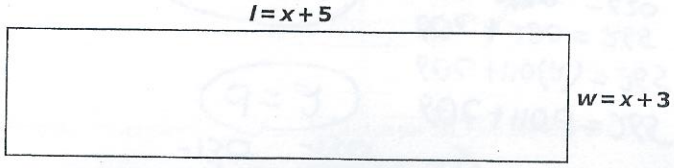


$(w+2)(w+6)$

$= w^2 + 6w + 2w + 12$

$= w^2 + 8w + 12$

6. The area is found using the formula $A = lw$, where A is the area, l is the length, and w is the width. The rectangle below has an area of 63 square feet.



What is the width of the rectangle to the nearest foot?

$A = LW$

$63 = (x+5)(x+3)$

$63 = x^2 + 8x + 15$

$-63 \quad -63$

$0 = x^2 + 8x - 48$

$0 = (x+12)(x-4)$

So $x = -12, 4$

$w = x + 3$

$w = 4 + 3$

7

7. The function $f(t) = -5t^2 + 20t + 60$ models the approximate height of an object t seconds after it is launched. How many seconds does it take the object to hit the ground?

$5(-t^2 + 4t + 12)$

$5(t+2)(-t+6)$

$-t^2$	12	$-12t^2$
$1t$	6	$6t$
$-1t$	2	$-2t$

4t

$t+2=0$ $\quad -2 \quad -2$ $\quad t=-2$

$-t+6=0$ $\quad -6 \quad -6$ $\quad -t=-6$ $\quad t=6$

$t=6$

8. While standing on a cliff 24 feet above the lake, Serena threw a rock with an initial upward velocity of 20 feet per second. The equation $h = -16t^2 + 20t + 24$ gives the height h of the rock after t seconds. How many seconds does it take for the rock to hit the water?

$4(-4t^2 + 5t + 6)$

$4(-t+2)(4t+3)$

$-4t^2$	6	$-24t^2$
$4t$	2	$8t$
$-1t$	3	$-3t$

5t

$-t+2=0$ $\quad -2 \quad -2$ $\quad -t=-2$ $\quad t=2$

$4t+3=0$ $\quad -3 \quad -3$ $\quad 4t=-3$ $\quad t=-3/4$

$t=2$

9. The function $f(t) = -16t^2 + 104t + 56$ models the appropriate height in feet of an object t seconds after it is launched. How many seconds does it take for the object to hit the ground?

$8(-2t^2 + 13t + 7)$

$8(2t+1)(-t+7)$

$-2t^2$	7	$-14t^2$
$2t$	7	$14t$
$-1t$	1	$-1t$

13t

$2t+1=0$ $\quad -1 \quad -1$ $\quad 2t=-1$ $\quad t=-1/2$

$-t+7=0$ $\quad -7 \quad -7$ $\quad -t=-7$ $\quad t=7$

$t=7$

10. Suppose the function $f(x) = 0.05x + 30$ represents the monthly phone bill, in dollars, for x minutes of calls. Courtney has \$25 now. How many more dollars does Courtney need for 500 minutes of phone calls?

500 × .05 = 25.00

0.05(500)+30
25+30
=55

needs \$30

11. Suppose that the function $f(x) = 2x + 12$ represents the cost to rent x movies a month from an internet movie club. Makayla now has \$10. How many more dollars does Makayla need to rent 7 movies next month?

2(7)+12
14+12
=26

needs \$16

12. Suppose that the function $f(x) = 0.1x + 7$ represents the cost to download x songs a month from an internet music club. Arthur now has \$10. How many more dollars does Arthur need to buy 60 songs?

60 × .1 = 6.0

0.1(60)+7
6+7
=13

needs \$3

13. The table below shows the models for the cost, in dollars, for renting a car for x miles from two different rental companies.

Company A	$f(x) = 1.25x + 50$
Company B	$g(x) = 1.3x + 40$

.05 ⟌ 10.00 = 200

1.25x+50 = 1.3x+40
−1.25x −1.25x
50 = .05x+40
−40 −40
10/.05 = .05x/.05
x=200

At what number of miles will the cost be the same?

set equal

14. Jamie and Reza are collecting used bottles for recycling. The total number of bottles each has collected during the first four days is shown in the table below.

Day	Jamie	Reza
1	1	5
2	2	15
3	4	25
4	8	35
5	16	45
6	32	55
7	64	65
8	128	75

x2 each time

adds 10 each time

Based on the patterns in the table, on which day will Jamie have collected more bottles than Reza?

8

min	K	D
0		Start
1		
2		
3		
4	Start	
5		1st basket
6		
7		
8	1st B	
9		
10		2nd B
11		
12	2nd B	
13		
14		
15		3rd B
16	3rd B	
17		
18		
19		
20	4th B	4th B

15. Two girls, Dawn and Kristin, put together gift baskets. Kristin started 4 minutes after Dawn started.

- Kristin puts together a gift basket in 4 minutes
- Dawn puts together a gift basket in 5 minutes.

20 min

For how many minutes had Dawn been putting together baskets when the two girls have put together exactly the same number of baskets?

two ways →

K = 4x+4
D = 5x+0

4x+4 = 5x
4 = x
So after 4 baskets they are equal

Dawn 5 min each basket
5·4 = 20 minutes

16. Two boys, Shawn and Curtis, went for a walk. Shawn began walking 20 seconds earlier than Curtis.

- Shawn walked at a speed of 5 feet per second.
- Curtis walked at a speed of 6 feet per second.

For how many seconds had Shawn been walking at the moment when the two boys had walked exactly the same distance?

this would be a long table so get eq.

6x−120 = 5x so x=120 (120 seconds)

x Sec	y 5ft	y Cft
20	100	0
21	105	6
22	110	12

Shawn plug in m and x by y=5x+b
100 = 5(20)+b
b = 0
Shawn y=5x

Curtis y=6x+b
0 = 6(20)+b
b = −120
Curtis y=6x−120

17. The math club sells candy bars and drinks during football games.

- 60 candy bars and 110 drinks will sell for \$265.
- 120 candy bars and 90 drinks will sell for \$270.

How much does each candy bar sell for? (Note: Express the answer in dollars.cents.)

(60c+110d = 265) ·−2
120c+90d = 270

−120c−220d = −530
+ 120c+90d = 270
−130d = −260
−130 −130
d = 2

60c+110d = 265
60c+110(2) = 265
60c+220 = 265
−220 −220
60c = 45
60 60
c = 45/60 = 3/4 = .75

C = .75

18. Shawna makes money selling bracelets and necklaces. Each bracelet sells for one price, and each necklace sells for another.

- 10 bracelets and 16 necklaces sell for $389.
- 16 bracelets and 10 necklaces sell for $365.

How much does each necklace sell for? (Note: Express the answer in dollars.cents.)

$(10b+16n=389)\cdot 8$

$(16b+10n=365)\cdot -5$

$80b+128n=3112$

$+\ -80b-50n=-1825$

$\frac{78n}{78}=\frac{1287}{78}$

$n=16.5$

$78\overline{)1287}$ → -78, 507, -468, 39

$39/78=1/2$

$16b+10n=365$

$16b+10(16.5)=365$

$16b+165=365$

$-165\ \ -165$

$\frac{16b}{16}=\frac{200}{16}$

$b=12.5$

19. The table below can be represented as a slope-intercept equation.

X	Y
-3	-5
-1	-1
2	5

pick two point, find slope then yI

What is the y-intercept of the slope-intercept equation?

$(-1,-1)(2,5)$

$\frac{5-(-1)}{2-(-1)}=\frac{6}{3}=2$

$y=2x+b$

$5=2(2)+b$

$5=4+b$

$b=1$

yI = 1

20. The table below can be represented by a slope-intercept equation.

X	Y
-2	-9
1	-3
3	1

pick two points, find slope then yI

What is the y-intercept of the equation?

$(1,-3)(3,1)$

$\frac{1-(-3)}{3-1}=\frac{4}{2}=2$

$y=2x+b$

$1=2(3)+b$

$1=6+b$

$-6\ \ -6$

$b=-5$

yI = -5

21. The table below show the growth of a plant over many days.

Time (days)	Height (cm)
30	9
35	10
40	11
45	13
50	15
55	17
60	21

What is the average change in height, in centimeters per day, from day 40 to 60?

$(40,11)(60,21)$

$\frac{21-11}{60-40}=\frac{10}{20}=1/2$

22. If the sum of three consecutive integers is 36, what is the largest of the three numbers?

$n, n+1, n+2$

$3n+3=36$

$-3\ \ -3$

$3n=33$

$n=11$

11, 12, 13

23. The sum of three consecutive odd integers is -45, what is the smallest of the three numbers?

$n, n+2, n+4$

$3n+6=-45$

$-6\ \ -6$

$3n=-51\ \ n=-17$

-17, -15, -13

24. What is the smallest of 3 consecutive positive integers if the product of the smaller two integers is 5 less than 5 times the largest integer?

$n, n+1, n+2$

$n(n+1)=n^2+n$

$5(n+2)=5n+10$

$n^2+n=5n+10-5$

$n^2+n=5n+5$

$-5n\ \ -5n$

$n^2-4n=5$

$-5\ \ -5$

$n^2-4n-5=0$

$(n-5)(n+1)=0$

$n-5=0$

$+5\ \ +5$

$n=5$

positive

$n+1=0$

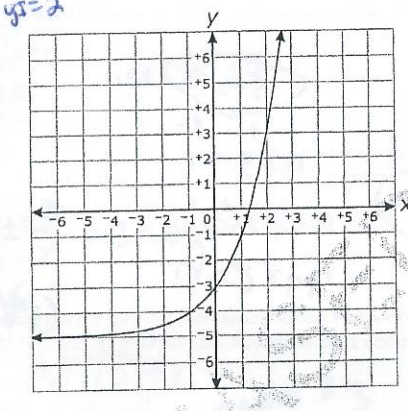
$-1\ \ -1$

$n=-1$

5, 6, 7

25. The function $f(x) = 2(2)^x$ was replaced with $f(x) + k$, resulting in the function graphed below.

yI=2



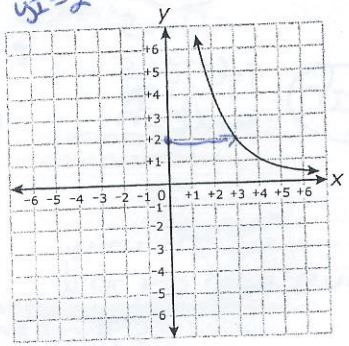
new yI=-3
went down 5 spaces
so k=-5

What is the value of k?

-5

26. The function $f(x) = 2\left(\frac{1}{2}\right)^x$ was replaced with $f(x + k)$, resulting in the function graphed below.

yI=2

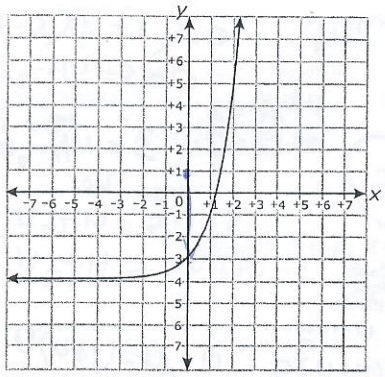


went to the right
3 spaces
so k=-3

What is the value of k?

-3

27. A function is graphed below.



What is the function? all have a yI=1 so that's the original place went down 4

A $f(x) = 3^x - 3$

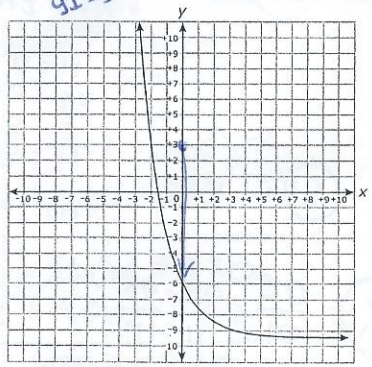
C $f(x) = 4^x - 3$

B $f(x) = 3^x - 4$

D $f(x) = 3^{x+4}$

28. The function $f(x) = (3)\left(\frac{1}{2}\right)^x$ was replaced with $f(x) + k$ resulting in the function graphed below.

yI=3



went down 8

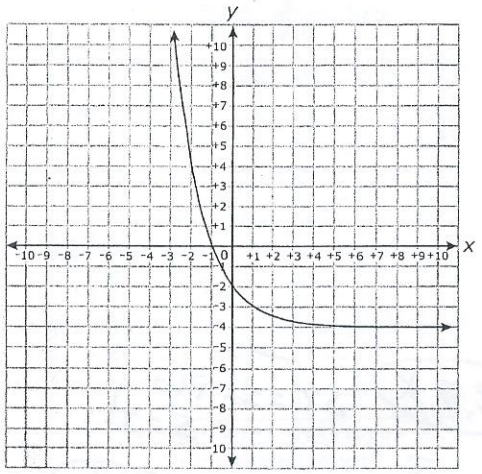
What is the value of k?

-8

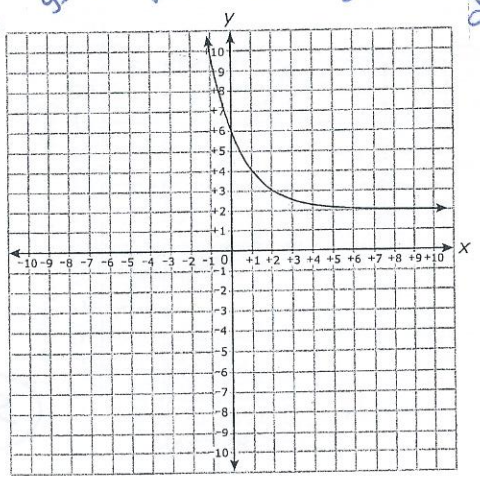
29. Which is the graph of the function $f(x) = 4\left(\frac{1}{2}\right)^x - 2$?

yI=4 ↓ vert down 2 Since b=1/2 it is decay

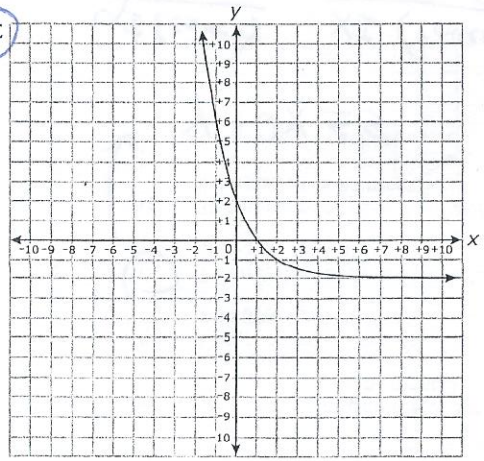
A



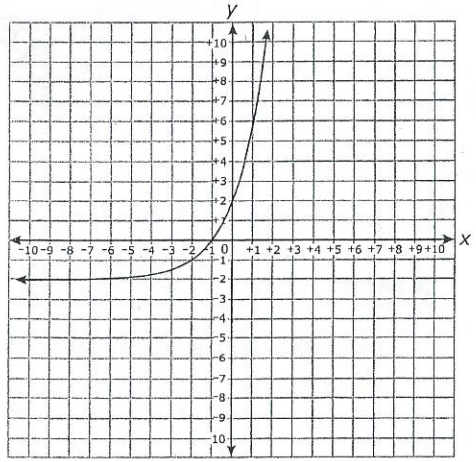
B



C



D

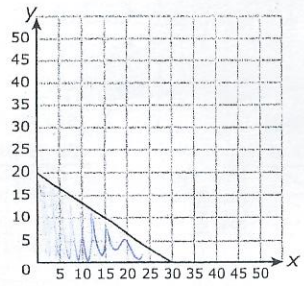


30. The graph of the function $f(x) = 3^x$ was translated 2 units to the right and 6 units down, resulting in the graph of $g(x)$. Which function represents $g(x)$?

-2 w/ x -6 beyond

A. $g(x) = 3^{(x-2)} - 6$
B. $g(x) = 3^{(x+2)} - 6$
C. $g(x) = 3^{(x-6)} - 2$
D. $g(x) = 3^{(x-6)} + 2$

31. Which scenario could be modeled by the graph below?



A Three times the number of video games, y, plus two times the number of DVDs, x, is at most 60.

B Three times the number of video games, y, plus the number of DVDs, x, is at most 90.

C Two times the number of video games, y, plus the number of DVDs, x, is at most 60.

D Two times the number of video games, y, plus three times the number of DVDs, x, is at most 60.

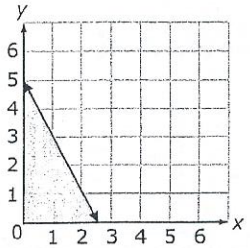
$3y + 2x \leq 60$

yI (cover x): $3y \leq 60$, $y \leq 20$

xI (cover y): $\frac{2x}{2} \leq \frac{60}{2}$, $x \leq 30$

graph has yI=20 xI=30

32. What scenario could be modeled by the graph below?



A The number of pounds of apples, y, minus two times the number of pounds of oranges, x, is at most 5.

B The number of pounds of apples, y, minus half the number of pounds of oranges, x, is at most 5.

C The number of pounds of apples, y, plus two times the number of pounds of oranges, x, is at most 5.

D The number of pounds of apples, y, plus half the number of pounds of oranges, x, is at most 5.

$y + 2x \leq 5$

yI (cover x) $\quad y \leq 5$

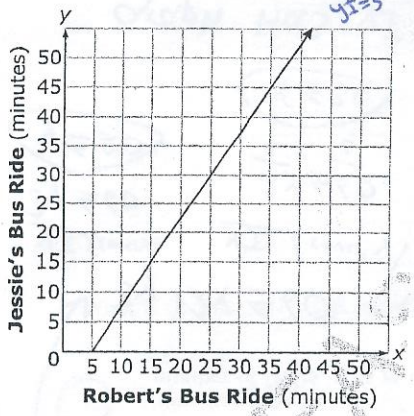
xI (cover y) $\quad \frac{2x}{2} \leq \frac{5}{2}$

yI = 5 and xI = 2.5 $\quad x \leq 2.5$

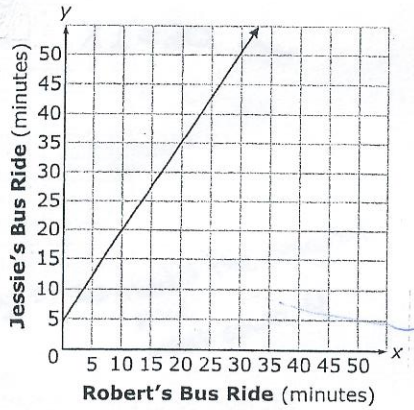
33. Jessie's bus ride to school is 5 minutes more than $\frac{2}{3}$ the time of Robert's bus ride. Which graph shows the possible times of Jessie's and Robert's bus rides?

$y = 5 + \frac{2}{3}x$ (yI = 5, slope = 2/3)

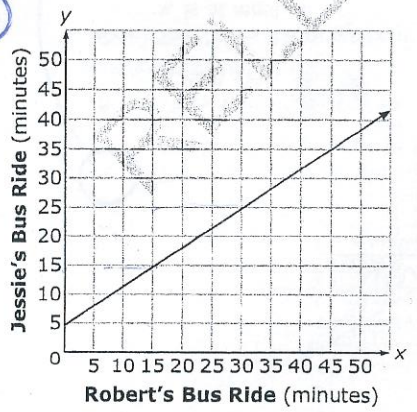
A



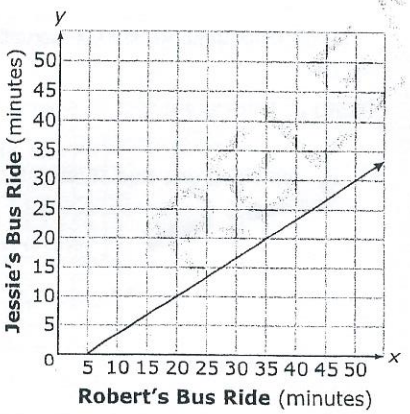
C



B



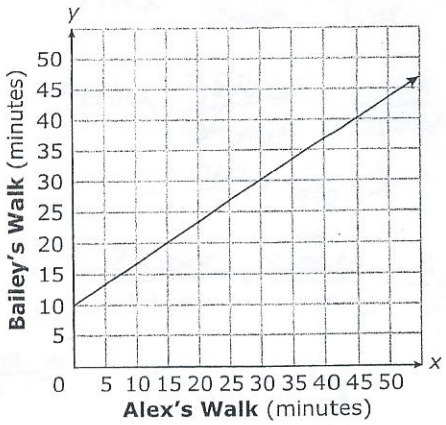
D



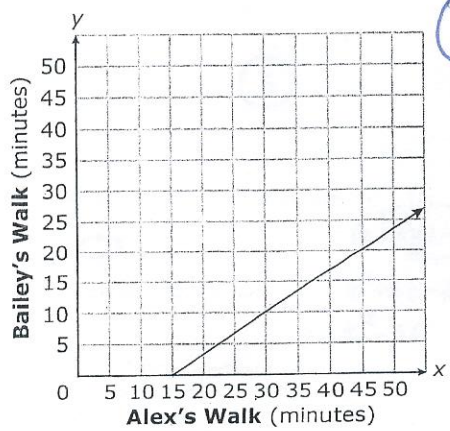
34. Bailey's walk to school is 10 minutes less than $\frac{3}{2}$ the time of Alex's walk. Which graph shows the possible times of Alex's and Bailey's walks?

$y = \frac{3}{2}x - 10$

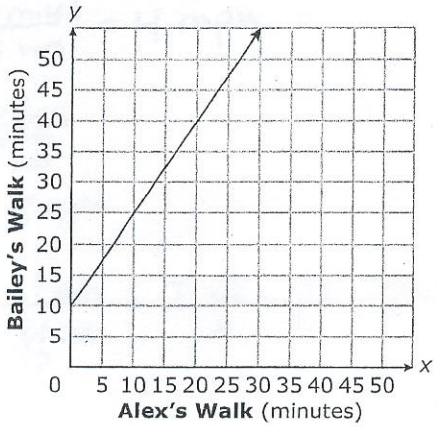
A



B



C



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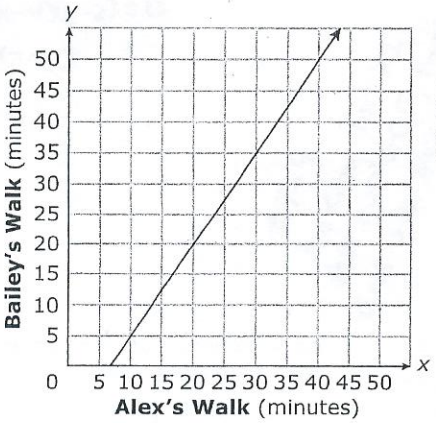
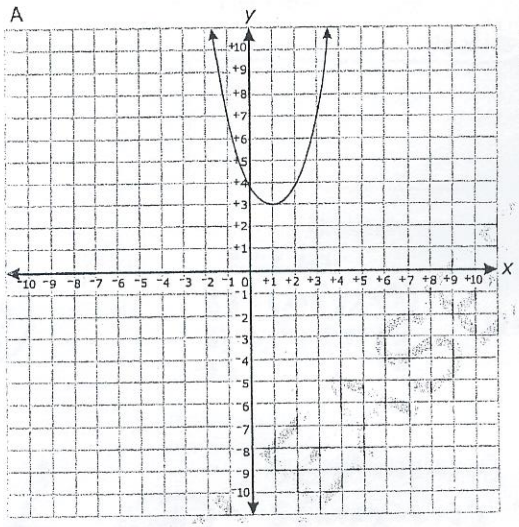


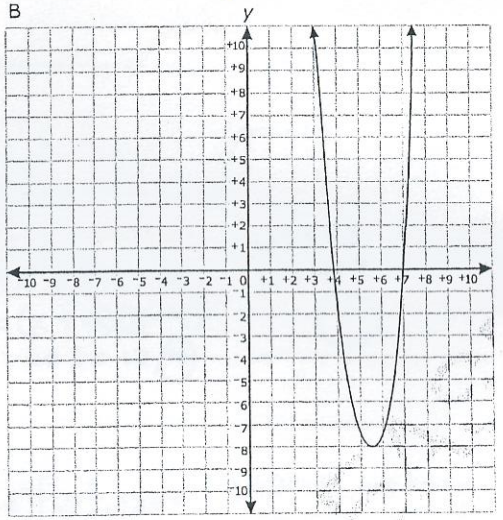
35. Which is the graph of the function $f(x) = 4x^2 - 8x + 7$?

$y = 7$

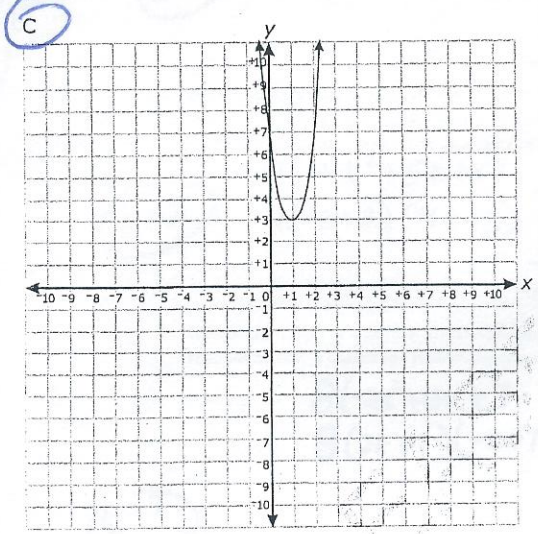
A



B



C



D