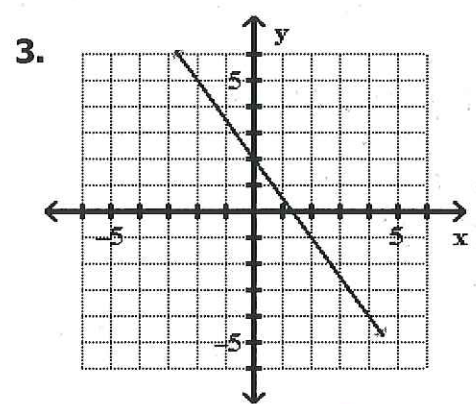
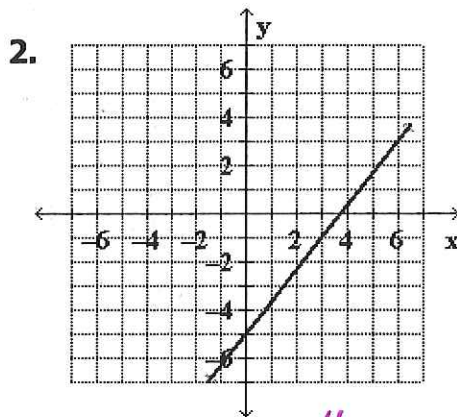
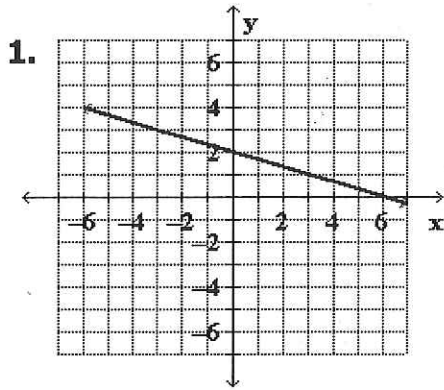


# Unit 6 Practice Test: Linear Concepts

Accelerated 7<sup>th</sup> Grade Math

Name: Key

For 1–3, create the linear equation for each of the following graphs:



#1 answer:  $y = -\frac{1}{3}x + 2$  #2 answer:  $y = \frac{4}{3}x - 5$  #3 answer:  $y = -\frac{3}{2}x + 2$

For 4–6, create an equation for each of the following tables:

4.  $+5 \downarrow$

x	y
4	-3
9	-2
14	-1
19	0

$\downarrow +1$

5.  $-5 \downarrow$

x	y
15	-2
10	2
5	6
0	10
-5	14

$\downarrow +4$

6.  $-8 \downarrow$

x	y
0	4
-8	8
-16	12
-24	16
-32	20

$\downarrow +4$

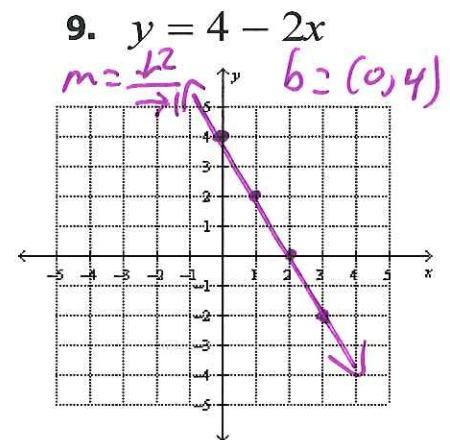
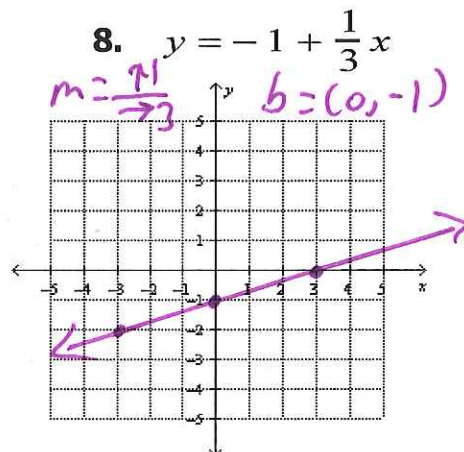
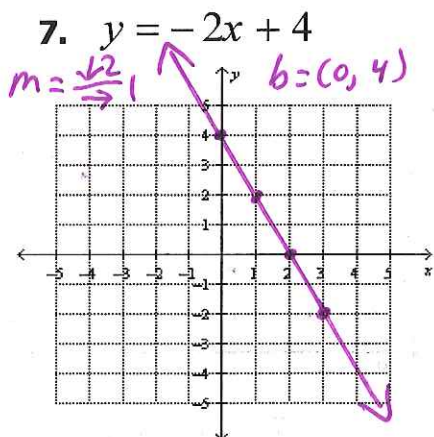
$m = \frac{1}{5}$   
 $0 = \frac{1}{5} \cdot 19 + b$   
 $0 = \frac{19}{5} + b$   
 $-\frac{19}{5} \quad -\frac{19}{5}$

$m = \frac{-4}{5}$   
 $=$

$m = \frac{-4}{8} = -\frac{1}{2}$

#4 answer:  $y = \frac{1}{5}x - \frac{19}{5}$  #5 answer:  $y = -\frac{4}{5}x + 10$  #6 answer:  $y = -\frac{1}{2}x + 4$

For 7–9, graph each equation. Put arrows on the line and cross both x-axis and y-axis.



For 10 & 11, create the equation for the line that passes through the following points:

10. (10, -7) & (-6, 1)

$$m = \frac{1 - (-7)}{-6 - 10} = \frac{8}{-16} = -\frac{1}{2}$$

$$-7 = -\frac{1}{2} \cdot 10 + b$$

$$-7 = -5 + b$$

$$+5 \quad +5$$

$$-2 = b$$

#10 answer:  $y = -\frac{1}{2}x + -2$

11. (10, 9) & (5, -6)

$$m = \frac{9 - (-6)}{10 - 5} = \frac{15}{5} = 3$$

$$9 = 3 \cdot 10 + b$$

$$9 = 30 + b$$

$$-30 \quad -30$$

$$-21 = b$$

#11 answer:  $y = 3x + -21$

For 12–15, use the following information provided. Dan and Kari are both typing a paper for their social studies homework.

Dan:

Minutes (x)	Words Typed (y)
0	0
2	60
4	120
6	240

$m = \frac{60}{2} = 30$

Kari:

She already has typed 150 words and she continues to type at a rate of 45 words per min.

$m = 45$

12. Who types faster? Circle one: Dan or Kari

13. If both functions were graphed, whose graph would be steeper? Circle one: Dan or Kari

14. Create an equation to represent Dan's situation. #14 answer:  $y = 30x$

15. Create an equation to represent Kari's situation. #15 answer:  $y = 45x + 150$

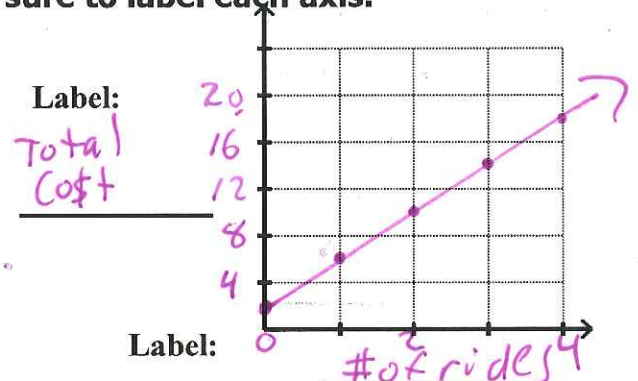
For 16–23, use the following information. A theme park charges a \$2 entrance fee and \$4 per ride.

16. Identify the Input: # of rides and Output: Total Cost

17. Fill-in the table for 0 rides up to 4 rides.

Input (x)	0	1	2	3	4
Output (y)	2	6	10	14	18

18. Draw a graph of the situation. Be sure to label each axis.



19. Create a linear equation that represents the situation.

#19 answer:  $y = 4x + 2$

20. Use the equation you wrote in #19 to answer to find out how much money will a customer spend at the park if they rode 9 rides? SHOW YOUR WORK FOR FULL CREDIT!!

$$y = 4(9) + 2$$

$$y = 36 + 2$$

$$y = 38$$

#20 answer: \$38

21. Use the equation you wrote in #19 to answer to find out how many rides they rode if they spent \$50 at the park? SHOW YOUR WORK FOR FULL CREDIT!!

$$50 = 4x + 2$$

$$\begin{array}{r} -2 \\ -2 \end{array} \qquad \begin{array}{r} -2 \\ -2 \end{array}$$

$$48 = 4x$$

$$\frac{48}{4} = \frac{4x}{4}$$

$$12 = x$$

#21 answer: 12 rides

22. What is the *slope* of this situation?

#22 answer: \$4/ride

23. What is the *y-intercept* of this situation?  
Write your answer as an ordered pair.

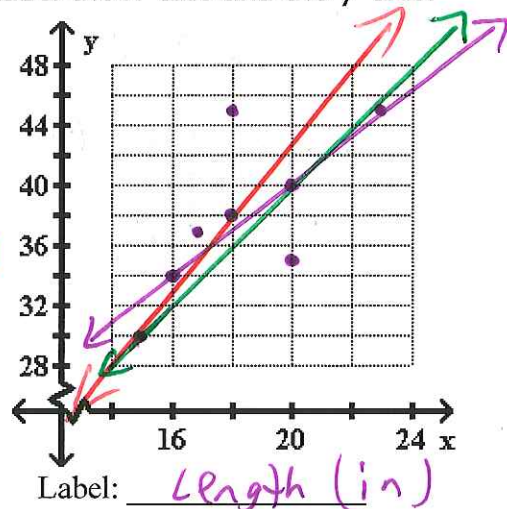
#23 answer: (0, \$2)

For 24–32, use the table and coordinate provided. The data shows the comparison of the length and wingspan of a bird.

24. Plot the data from the table. Make sure that you label the x-axis and the y-axis.

Length (in.)	Wingspan (in.)
20	35
20	40
17	37
23	45
15	30
18	38
16	34
18	45

Label: Wingspan (in)



25. Draw a trend line that best fits the scatter plot. Make sure you have arrows on your line.

I used 3 different trend lines  
the best one is purple. (16, 34) and (20, 40)  
(15, 30) and (20, 40)  
(15, 30) and (18, 38)

26. Create an equation for the line of best fit in Slope-Intercept form ( $y = mx + b$ ). Show your work for full credit.

Purple  
 $(16, 34)$  and  $(20, 40)$   
 $m = \frac{40-34}{20-16} = \frac{6}{4} = \frac{3}{2}$

$$40 = \frac{3}{2} \cdot 20 + b$$

$$40 = 30 + b$$

$$b = 10$$

Green  
 $(15, 30)$  and  $(20, 40)$   
 $m = \frac{40-30}{20-15} = \frac{10}{5} = 2$

$$40 = 2 \cdot 20 + b$$

$$40 = 40 + b$$

$$b = 0$$

Red  $(15, 30)$  and  $(18, 38)$   
 $m = \frac{38-30}{18-15} = \frac{8}{3}$

$$30 = \frac{8}{3} \cdot 15 + b$$

$$30 = 40 + b$$

$$b = -10$$

#26 answer:  $y = \frac{3}{2}x + 10$   
 $y = 2x$   
 $y = \frac{8}{3}x + 10$

27. In the equation you wrote in part #26, the slope, or  $m =$   $\frac{3}{2}$

28. In the context of this situation of the length and wingspan of a bird, distinguish the meaning this:

Wingspan increases 3 in for every 2 in increase in length

29. In the equation you wrote in part #26, the  $y$ -intercept, or  $b =$   $(0, 10)$  Write as an ordered pair.

30. In the context of this situation of the length and wingspan of a bird, distinguish the meaning this:

"At birth, the birds wingspan is 10 in"

31. Using the equation to #26, if a bird has a length of 35 in, predict the wingspan. Show your work for full credit.

$$y = \frac{3}{2} \cdot 35 + 10$$

$$y = 52.5 + 10$$

$$y = 62.5$$

#31 answer:  $y = 62.5$  in

32. Using the equation to #26, if a bird has a wingspan of 27 in, predict the length. Show your work for full credit.

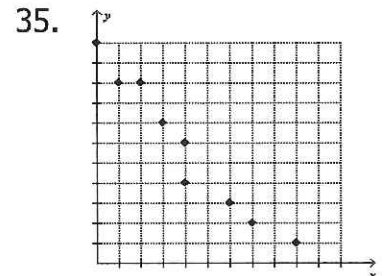
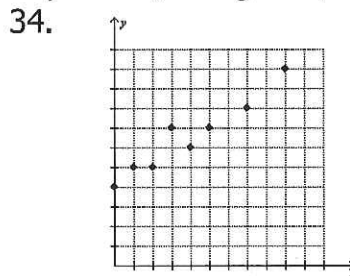
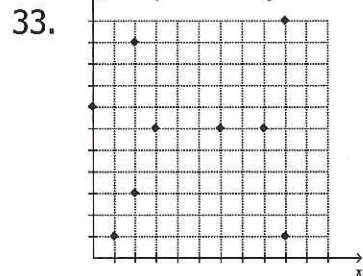
$$27 = \frac{3}{2}x + 10$$

$$17 = \frac{3}{2}x$$

$$\frac{2}{3} \cdot 17 = \frac{3}{2} \cdot \frac{2}{3}x$$

#32 answer:  $x = \frac{34}{3}$  in  $= 11\frac{1}{3}$  in

For 33-35, identify if the scatter plot has a positive, a negative, or no association.



#33 answer: No Assoc.

#34 answer: Pos Assoc.

#35 answer: Neg Assoc.