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Chapter 4 Test – Equations of Linear Functions

Grade	8	Chapter	4	Lessons	4-1 to 4-5, 4-7	Coursebook Pages	212-254, 263-281
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Student Name		Class		Date	
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Multiple Choice: CALCULATOR NOT ALLOWED

1	
	Which of the following is the equation of the line shown above?
	A $y = 4x$
	B $y = \frac{1}{4}x$
	C $y = x + \frac{1}{4}$
D $y + \frac{1}{4} = x$	

2	Which of the following is an equation for the line passing through (0, -7) with a slope of 0?
	A $y = -\frac{1}{7}x$
	B $y = -7x$
	C $y = -7$
	D $x = -7$



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3	A line has a slope of -3 and passes through (2, 4). When the equation of this line is written in slope-intercept form, what is the y -intercept?	
	A	-2
	B	2
	C	10
D	14	

4	A line passes through (4, -5) and (6, -9). When the equation of this line is written in slope-intercept form, what is the y -intercept?	
	A	-3
	B	-2
	C	3
D	2	

5	A line passes through (-2, -3) and (-2, 7). What is the equation of this line?	
	A	$y = -\frac{1}{2}x$
	B	$y = -2x$
	C	$y = -2$
D	$x = -2$	

6	Which of the following is the standard form for the equation in question 5?	
	A	$x + 2y = 0$
	B	$2x + y = 0$
	C	$y = -2$
D	$x = -2$	

7	Which of the following is the slope of a line that is parallel to the graph of $4x - 2y = 8$?	
	A	-4
	B	-2
	C	2
D	4	



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8	Which of the following is the slope of a line that is perpendicular to the graph of $-2x - 3y = 0$?	
	A	-3
	B	$-\frac{2}{3}$
	C	$\frac{3}{2}$
D	2	

9	A graph of data that shows a strong, linear, negative correlation has _____.	
	A	a narrow pattern from lower left to upper right
	B	a narrow pattern from upper left to lower right
	C	a narrow horizontal pattern below the x -axis
D	all negative x -values	

10	One way to find the inverse of a relation is to _____.	
	A	exchange the coordinates of the ordered pairs
	B	write the opposite of each value in the domain
	C	write the opposite of each value in the range
D	pair domain values together and pair range values together	

11	Which of the following is a step in finding the inverse of a function?	
	A	interchange x and y in the equation and solve for x
	B	interchange x and y in the equation and solve for y
	C	only replace $f(x)$ with y
D	only replace $f(x)$ with $f^{-1}(x)$	



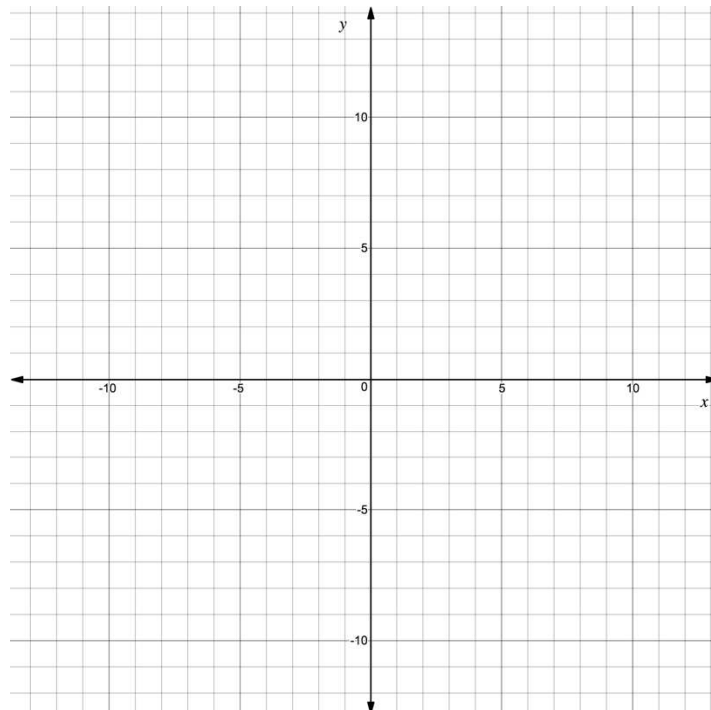
Chapter 4 Test – Equations of Linear Functions

Constructed Response: CALCULATOR ALLOWED

- a) Find the slope and write an equation in point-slope form for the line that passes through (1, -2) and (3, 4).

- b) Write the equation in slope-intercept form.

- c) Graph the equation.



This question is continued on the next page.



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- d) What is the coefficient of y when the equation in parts a and b are written in standard form?

- e) Find the value of x when $y = 19$.

(/6 marks)

- a) Find the slope and write an equation in slope-intercept form for the line that passes through $(-6, 4)$ and is parallel to the graph of $y = -2$.

- b) What is the slope of a line that is perpendicular to the graph of your answer in part a ?

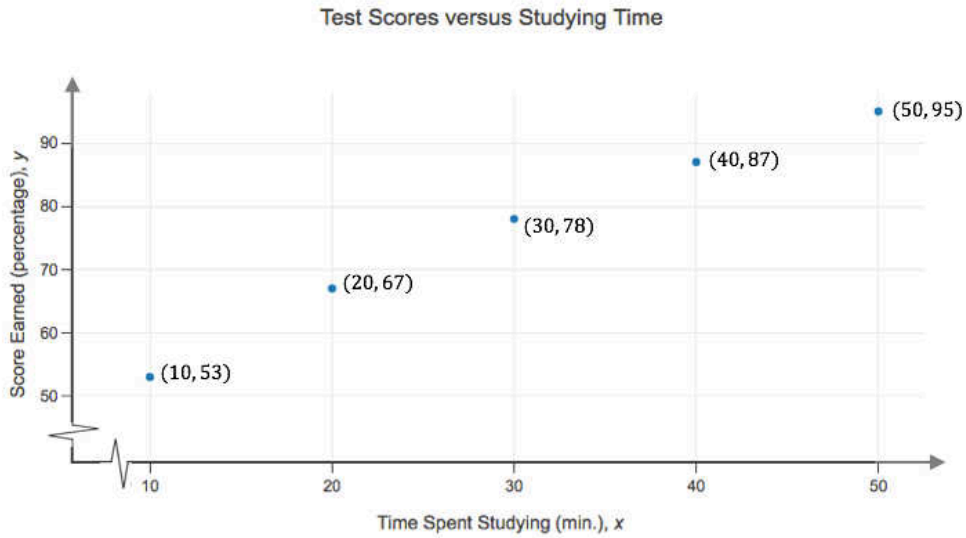
- c) Write an equation for the line that also passes through $(-6, 4)$ and is perpendicular to the graph of your answer in part a .

(/4 marks)



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Use the scatter plot below.



- a) Using the second and fourth data points, find the slope and write the point-slope form of the equation for a line of best fit.

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- b) Explain the type of correlation in the context.

- c) Use the equation of the best-fit line from part a to estimate the score earned when you study for 5 minutes.

(/4 marks)



Chapter 4 Test – Equations of Linear Functions

Multiple Choice	/11
Constructed Response	/14
Total Marks	/25
Percentage	/100%

Grade	8	Lesson(s)	Lesson 4-1: Graphing Equations in Slope-Intercept Form Lesson 4-2: Writing Equations in Slope-Intercept Form Lesson 4-3: Writing Equations in Point-Slope Form Lesson 4-4: Parallel and Perpendicular Lines Lesson 4-5: Scatter Plots and Lines of Fit Lesson 4-7: Inverse Linear Functions
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Chapter 4 Test – Equations of Linear Functions

Answer Key

Multiple Choice

Q1	B
Q2	C
Q3	C
Q4	C
Q5	D
Q6	D
Q7	C
Q8	C
Q9	B
Q10	A
Q11	B



Chapter 4 Test – Equations of Linear Functions

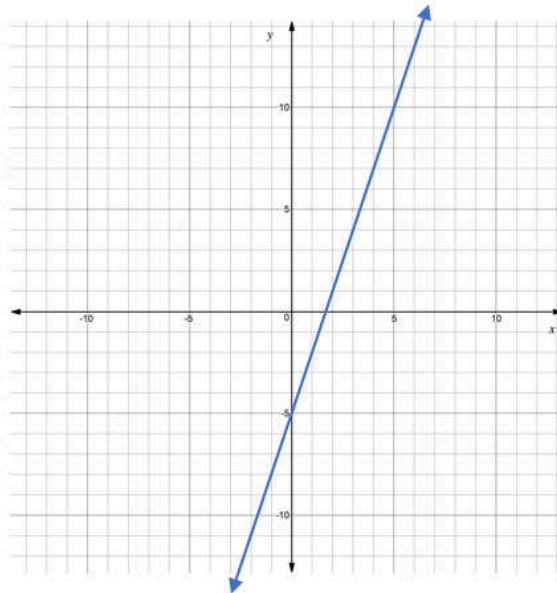
Constructed Response

- a) One mark should be awarded for a slope of 3.
If the student states an equivalent fraction, still award the mark.

One mark should be awarded for the point-slope form $y - 4 = 3(x - 3)$ or $y + 2 = 3(x - 1)$.
If the student uses an equivalent fraction to 3 as the slope, still award the mark.

- b) One mark should be awarded for the slope-intercept form $y = 3x - 5$.
If the student uses an equivalent fraction to 3 as the slope, still award the mark.

- c) One mark should be awarded for a line with an x -intercept of between 1 and 2 and a y -intercept of -5.



- d) One mark should be awarded for the coefficient of -1.
e) One mark should be awarded for an x -value of 8.

6 marks



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- a) One mark should be awarded for a slope of 0.

One mark should be awarded for the slope-intercept form $y = 4$.

If the student writes $y = 0x + 4$, still award the mark.

- b) One mark should be awarded for slope of “undefined.”

If the student gets the equation in part a wrong but correctly gives the slope of a line perpendicular to the graph of their line, still award the mark.

- c) One mark should be awarded for the equation $x = -6$.

If the student writes $0y = x + 6$, still award the mark.

If the student gets the equation in part a wrong but correctly writes an of a line perpendicular to the graph of their line, still award the mark.

4 marks

14

- a) One mark should be awarded for a slope of $\frac{20}{20}$ or 1.

If the student states an equivalent fraction, still award the mark.

One mark should be awarded for the point-slope form $y - 67 = 1(x - 20)$ or $y - 87 = 1(x - 40)$.

If the student uses $\frac{20}{20}$ or an equivalent fraction to $\frac{20}{20}$ as the slope, still award the mark.

If the student writes $y - 67 = x - 20$ or $y - 87 = x - 40$, still award the mark.

If the student writes an equation using the same slope but one of the other three points, still award the mark.

- b) One mark should be awarded for an explanation of the positive correlation that the longer you study, the higher the score you'll earn.

- c) One mark should be awarded for 52%.

If the student doesn't write the units, still award the mark.

If the student uses one of the other three points to write the equation in part a, still award the mark for 48%, 50%, or 53%.

If the student gets the equation in part a wrong but correctly estimates the score earned when you study for 5 minutes using their equation, still award the mark.

4 marks



Chapter 4 Test – Equations of Linear Functions

Data Analysis Information

Use the information below to help you determine which student learning outcomes are not being met by the majority of your students. This will help you make determinations about re-teaching, spiraling content not mastered, and implementing other interventions without interrupting the scheme of work.

Question	Lesson	Student Learning Outcome(s)
1	4-1	Write and graph linear equations in slope-intercept form.
2	4-1	Write and graph linear equations in slope-intercept form.
3	4-2	Write an equation of a line in slope-intercept form given the slope and one point.
4	4-2	Write an equation of a line in slope-intercept form given two points.
5	4-3	Write equations of lines in point-slope form.
6	4-3	Write linear equations in different forms.
7	4-4	Write an equation of the line that passes through a given point, parallel to a given line.
8	4-4	Write an equation of the line that passes through a given point, perpendicular to a given line.
9	4-5	Investigate relationships between quantities by using points on a scatter plot.
10	4-7	Find the inverse of a relation.
11	4-7	Find the inverse of a linear function.
12	4-1 to 4-3	Write and graph linear equations in slope-intercept form. Write an equation of a line in slope-intercept form given two points. Write equations of lines in point-slope form. Write linear equations in different forms.
13	4-4	Write an equation of the line that passes through a given point, parallel to a given line. Write an equation of the line that passes through a given point, perpendicular to a given line.
14	4-5	Investigate relationships between quantities by using points on a scatter plot. Use lines of fit to make and evaluate predictions.