

Pre-Algebra 2014–2015 Practice Semester 1 Exam

1. Which number is NOT equivalent

to $3\frac{2}{3}$?

- (A) $\frac{11}{3}$
- (B) $3\frac{4}{6}$
- (C) $3.\bar{6}$
- (D) 3.6

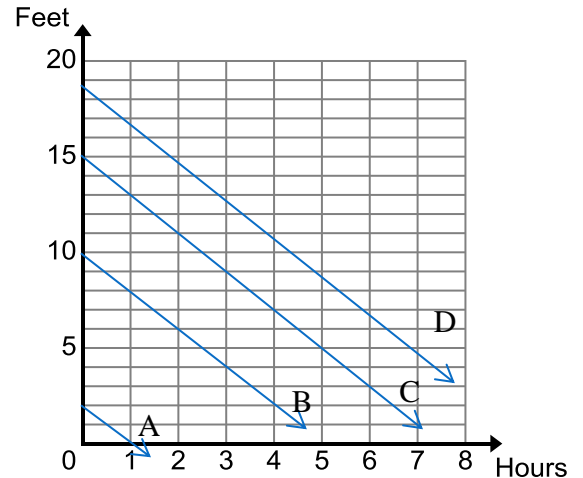
2. Which fraction is equivalent to 0.375?

- (A) $\frac{15}{4}$
- (B) $\frac{7}{20}$
- (C) $\frac{3}{8}$
- (D) $\frac{1}{25}$

3. Classify 0.2002000200002000002... as terminating, repeating, or irrational.

- (A) Terminating, equal to 0.2
- (B) Repeating, equal to $0.\bar{2}$
- (C) Repeating, equal to $0.\overline{2002}$
- (D) Irrational

4. Andy and Bob want to remove a 15 foot block wall. They are able to take the wall down at a rate of 2 feet per hour. Which line best represents how fast the wall is coming down?



- (A) Line A
- (B) Line B
- (C) Line C
- (D) Line D

5. For which of the following equations can x equal all real numbers?

- (A) $7(2x+3) = 11x+3(x+7)$
- (B) $2x+12-x=15$
- (C) $8x+7=x$
- (D) $3(3+x) = 2+3x$

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6. Which of the following equations is a line, but not a function?

- (A) $y = x$
- (B) $y = -4x + 8$
- (C) $y = 5x^2$
- (D) $x = 8$

7. Which equation has no solution?

- (A) $4(x - 5) = 4x - 5$
- (B) $2x + 6 - 3x = x + 6$
- (C) $-3(4 + x) = -3x - 12$
- (D) $2x + 1 = 5x + 1$

8. Which expression is equivalent to $(4^3)^2$?

- (A) 4^1
- (B) 4^5
- (C) 4^6
- (D) 4^9

9. What is the value of 100^0 ?

- (A) 0
- (B) 1
- (C) 10
- (D) 1000

10. Write the fraction in simplest form.

$$\frac{24x^4y^2}{16x^5y^4}$$

- (A) $\frac{2x}{3y^2}$
- (B) $\frac{2}{3x^3}$
- (C) $\frac{3}{2xy^2}$
- (D) $\frac{3y^2}{2x}$

11. Complete the equation so that it has infinitely many solutions.

$$-4 + 9(6x - 1) = (Mx + N)$$

- (A) $M = 54$ and $N = 5$
- (B) $M = 54$ and $N = -13$
- (C) $M = 50$ and $N = -9$
- (D) $M = 6$ and $N = -1$

12. Solve for x .

$$.05(x + 1) - 1.5 = 0.3$$

- (A) $x = -26$
- (B) $x = 4$
- (C) $x = 16$
- (D) $x = 35$

13. The length of a football field is written as 3×10^2 units. Which unit best describes this length?

- (A) inches
- (B) feet
- (C) yards
- (D) miles

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14. Which shows how a calculator might display the number 3.8×10^{-14} ?
- (A) $38 \text{ E } 10^{-14}$
(B) $38 \text{ E } ^{-14}$
(C) $3.8 \text{ E } ^{-14}$
(D) $3.8 \text{ E } 10$
15. 6×10^5 is how many times as great as 3×10^2 ?
- (A) 2 times
(B) 20 times
(C) 200 times
(D) 2000 times
16. Tommy and Larry began reading the same book at the same time. Each boy reads at different rates.
- After 3 minutes, Tommy is on page 6.
After 6 minutes, Larry is on page 8.
Who is reading at a greater rate of change?
- (A) Tommy's reading rate which is $1\frac{1}{3}$ pages/min.
(B) Larry's reading rate which is $1\frac{1}{3}$ pages/min.
(C) Tommy's reading rate which is 2 pages/min.
(D) Larry's reading rate which is 2 pages/min.
17. Kate borrows \$450 from her mother and agrees to pay her back the same amount each month without interest. After 5 months she still owes her mother \$360. Choose the linear function that models the amount Kate owed her mother each month since she borrowed the money.
- (A) $y = 360 - 90x$
(B) $y = 360 - 18x$
(C) $y = 450 - 90x$
(D) $y = 450 - 18x$

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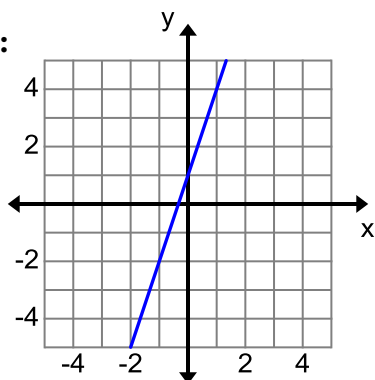
Use the given information to answer the following questions 18-20.

Function 1:

x	0	1	2	3
y	-3	0	3	6

Function 2: $y = 3x + 5$

Function 3:



18. What is the y -intercept for Function 1?
- (A) -3
(B) 0
(C) 3
(D) 6
19. Which function has a greater rate of change?
- (A) Function 1
(B) Function 2
(C) Function 3
(D) All are the same
20. Which function is a proportional relationship?
- (A) Function 1
(B) Function 2
(C) Function 3
(D) None

21. The table shows points on a line.

x	3	1	-3	-9	-11
y	-3	1	9	21	25

What are the y -intercept and rate of change of the line?

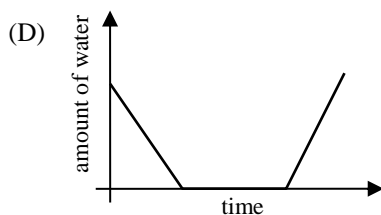
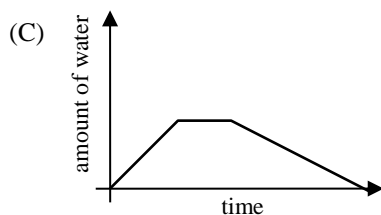
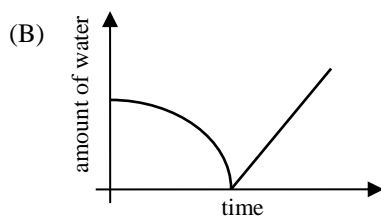
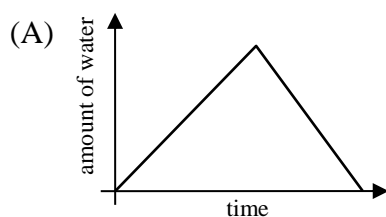
- (A) y -intercept = 3
Rate of change = -2
- (B) y -intercept = 4
Rate of change = -4
- (C) y -intercept = 8
Rate of change = 8
- (D) y -intercept = -1
Rate of change = 12
22. What is 3.46×10^5 written in standard form?
- (A) 0.00000346
(B) 0.0000346
(C) 346,000
(D) 34,600,000
23. What is 0.00039 written in scientific notation?
- (A) 3.9×10^{-4}
(B) 3.9×10^{-3}
(C) 3.9×10^3
(D) 3.9×10^4

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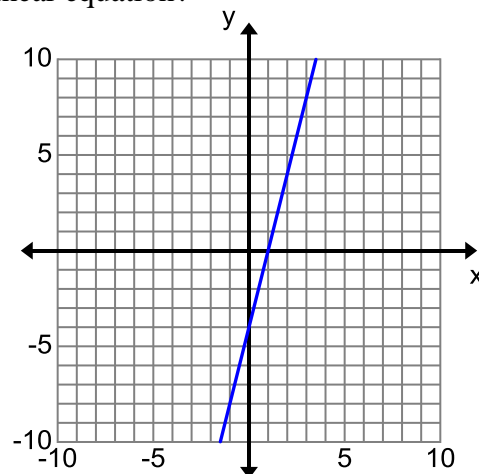
24. How can we be sure that the function $y = 4x + 8$ is linear?

- (A) Its y -intercept is 2 times its slope
- (B) It follows $y = mx + b$
- (C) Its graph is a line
- (D) Both (B) and (C)

25. Tina fills up the bath tub to take a bath. She takes a nice long hot bath then empties the bathtub. Choose the graph that best represents the amount of water in the tub during this process.



26. Given the graph of the line, what is the correct linear equation?



- (A) $y = 4x + 1$
- (B) $y = -4x + 1$
- (C) $y = \frac{1}{4}x - 4$
- (D) $y = 4x - 4$

27. Solve for a .

$$\frac{3}{4} + \frac{4a}{7} = \frac{6a}{7} + \frac{7}{8}$$

- (A) $a = -\frac{13}{16}$
- (B) $a = -\frac{7}{16}$
- (C) $a = \frac{7}{16}$
- (D) $a = \frac{49}{80}$

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28. Classify these numbers by selecting all that apply.

$$\sqrt{2}, \sqrt{3}, \frac{\sqrt{7}}{2}$$

I. Integer

II. Irrational

III. Rational

IV. Real

(A) III and IV

(B) II and IV

(C) IV only

(D) II only

29. Which of the following representations are linear functions?

I. $\{(2,7)(6,4)(0,3)(3,6)(1,5)\}$

II. $y = 2^x$

III.

Input	-3	0	3	6	9
Output	-4	-3	-2	-1	0

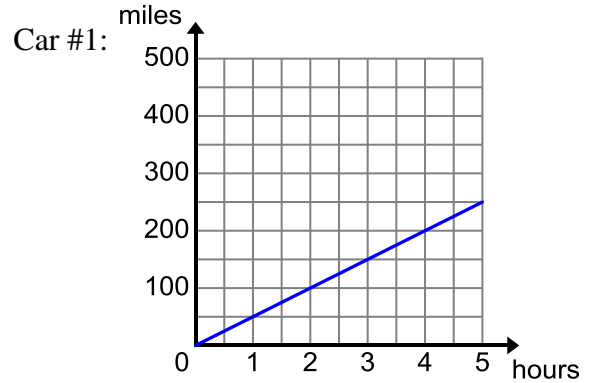
(A) I only

(B) III only

(C) II and III

(D) I and III

30. Which car is traveling at a faster rate?



Car #2:

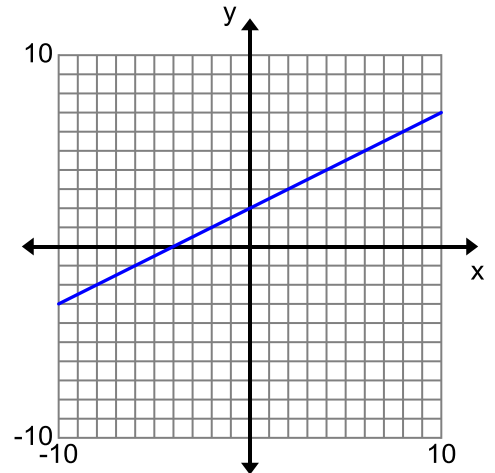
Hours	Miles Driven
2	110
4	220
6	330

(A) Car #1

(B) Car #2

(C) They are the same.

31. Which input/output pairs match the graph below.



(A) $\{(2, 0), (0, 4), (4, 4), (-2, 1), \}$

(B) $\{(0, 2), (-4, 0), (4, 4), (-2, 1), \}$

(C) $\{(2, 0), (0, 4), (4, 4), (2, -1), \}$

(D) $\{(0, 2), (4, 0), (4, 4), (2, -1), \}$

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32. The population of the southwest states, California, Nevada and Arizona are as follows.

California 3.8×10^7

Nevada 2.7×10^6

Arizona 6.6×10^6

What is the total population of the three states that make up the southwest?

- (A) 1.31×10^6
(B) 1.31×10^7
(C) 4.73×10^7
(D) 4.73×10^6

33. Which of the following tables represent functions?

I.

Input	Output
1	5
2	5
3	5
4	5

II.

Input	Output
2	1
8	7
6	5
4	3

III.

Input	Output
5	1
5	2
5	3
5	4

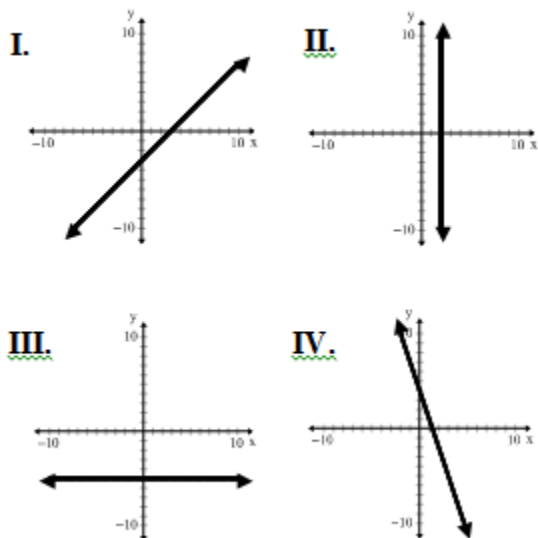
IV.

Input	Output
9	10
6	7
9	8
0	1

- (A) II only
(B) I and II only
(C) II and IV only
(D) III and IV only

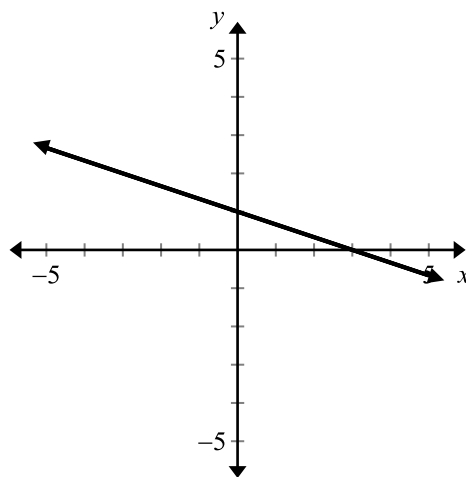
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34. Which of the following graphs represent functions?



- (A) II only
- (B) I and IV only
- (C) I, III, and IV only
- (D) I, II, III and IV

35. Use the graph:



What is the equation of the line in the graph?

- (A) $y = -\frac{1}{3}x + 1$
- (B) $y = -\frac{1}{3}x + 3$
- (C) $y = -3x + 1$
- (D) $y = -3x + 3$

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36. Which equation shows a proportional relationship?

(A) $y = \frac{1}{2}x - \frac{1}{2}$

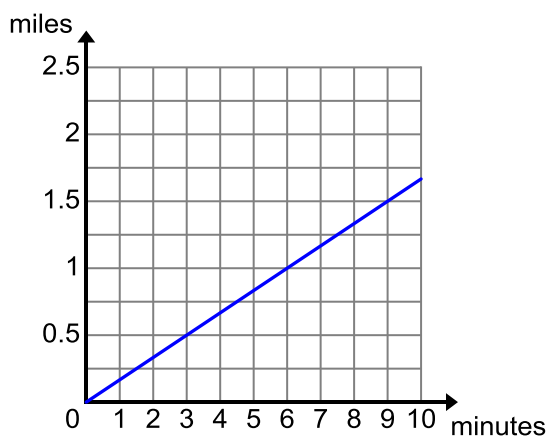
(B) $y = 2x - 2$

(C) $y = \frac{1}{2}x$

(D) $y = \frac{2}{x}$

37. Which boy had the fastest race time?

John:



Carlos:

$$y = \frac{1}{6}x$$

x is time in minutes
 y is miles

- (A) John
(B) Carlos
(C) They are the same.

38. For which equation is the set of ordered pairs a solution?

$$\{(-4, 3), (2, 0), (0, 1), (-2, 2)\}$$

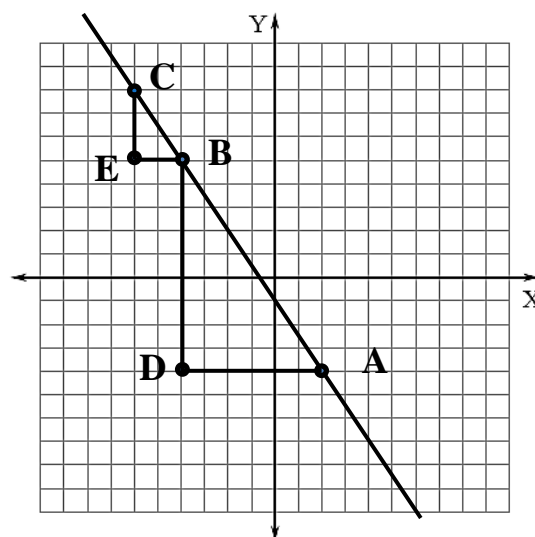
(A) $y = -2x$

(B) $y = 3x + 1$

(C) $y = -2x + 1$

(D) $y = -\frac{1}{2}x + 1$

39. In the diagram, \overline{AB} is the hypotenuse of the right triangle ABD and \overline{BC} is the hypotenuse of the right triangle BCE.



Which statement(s) are true?

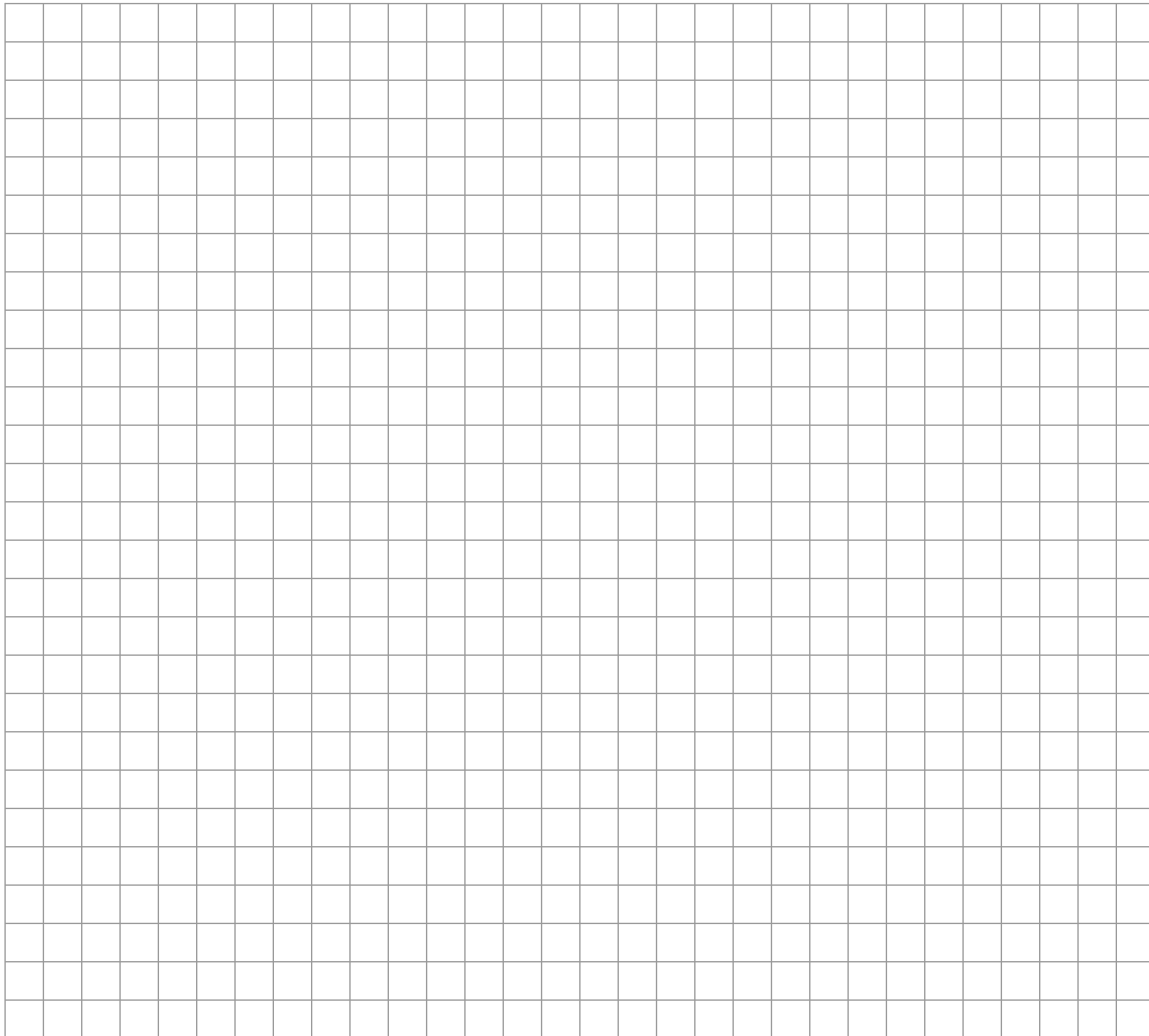
- I. $\frac{CE}{CB} = \frac{BD}{DA}$
- II. $\triangle ABD$ is similar to $\triangle BCE$.
- III. The slope of \overline{CB} is less than the slope of \overline{BA} .
- (A) I and II only
(B) II and III only
(C) II only
(D) III only

Practice A Pre-Algebra 8 2014–2015 Semester 1 Exam Free Response

1. The table shows the approximate populations of several countries in 2009.

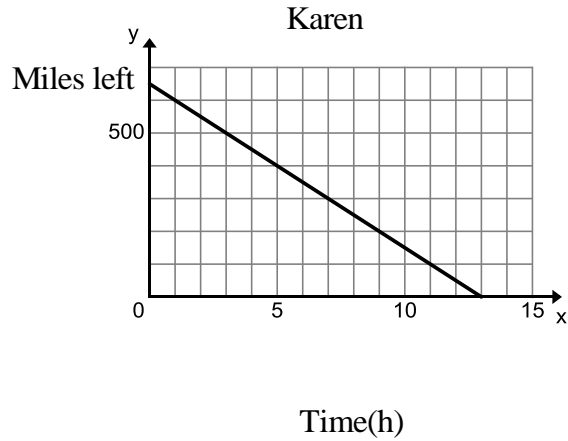
Country	Population
India	1,205,000,000
Japan	128,000,000
Russia	14.3×10^8
China	7.11×10^9

- (a) Express the population of India in scientific notation.
- (b) Express the population of China in standard notation.
- (c) List the populations of all four countries from least to greatest. Explain how you got your answer.



Practice A Pre-Algebra 8 2014–2015 Semester 1 Exam Free Response

2. Karen and Shila are driving home from a trip in separate cars. The graph and table below describe each person's trip.



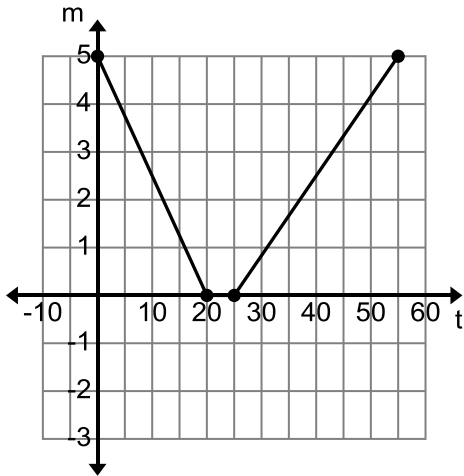
Shila

Time(h)	0	3	6	9
Miles left	650	455	260	65

- (a) Which person's speed is faster? Explain.
- (b) How many hours does it take Karen to get home? How many hours does it take Shila to get home? Explain.

Practice A Pre-Algebra 8 2014–2015 Semester 1 Exam Free Response

3. The graph shows the number of miles m that Brian is from home, t minutes after starting on a bike ride.



- (a) How far from home is Brian when he starts his bike ride? How do you know?
- (b) Find the time interval in which Brian's speed was the fastest. Explain.
- (c) What was Brian's fastest speed?
- (d) Describe in your own words the significance of the sign of the slope for the 3 different segments of Brian's ride.

