

March 2017 STAAR Grade 8 Math Rationales

Item #	Response A/F	Response B/G	Response C/H	Response D/J
1	A is incorrect because the graph shows a line that goes through the origin, which makes the linear relationship proportional.	B is correct because the graph shows a line that does not go through the origin, which makes the linear relationship non-proportional.	C is incorrect because the graph shows a line that goes through the origin, which makes the linear relationship proportional.	D is incorrect because the graph shows a line that goes through the origin, which makes the linear relationship proportional.
2	F is correct because the pentagon is translated 1 unit to the left and 10 units down, which is described by the transformation rule $(x - 1, y - 10)$.	G is incorrect because the pentagon is translated 1 unit to the left and 10 units down, which is described by the transformation rule $(x - 1, y - 10)$, not $(x + 1, y - 10)$.	H is incorrect because the pentagon is translated 1 unit to the left and 10 units down, which is described by the transformation rule $(x - 1, y - 10)$, not $(x - 1, y + 10)$.	J is incorrect because the pentagon is translated 1 unit to the left and 10 units down, which is described by the transformation rule $(x - 1, y - 10)$, not $(x + 1, y + 10)$.
3	A is incorrect because π is between the $\sqrt{9}/3$ and 2π . This comparison is true.	B is incorrect because $\sqrt{9}$ is between the $\sqrt{9}/3$ and 2π . This comparison is true.	C is correct because $\pi/9$ is not between the $\sqrt{9}/3$ and 2π . This comparison is NOT true.	D is incorrect because $\pi^2/9$ is between the $\sqrt{9}/3$ and 2π . This comparison is true.
4	F is correct because the graph represents a line with a slope of 45 gallons per minute.	G is incorrect because the graph represents a line with a slope of 15 gallons per minute.	H is incorrect because the graph represents a line with a slope of 0 gallons per minute.	J is incorrect because the graph represents a line with a slope of 60 gallons per minute.
5	A is incorrect because the dilation rule for P' can be found by multiplying each of the coordinates of (6, -3) by the scale factor, u, which is represented by $(6u, -3u)$, not $(6 + u, -3 + u)$.	B is incorrect because the dilation rule for P' can be found by multiplying each of the coordinates of (6, -3) by the scale factor, u, which is represented by $(6u, -3u)$, not $(6/u, -3/u)$.	C is incorrect because the dilation rule for P' can be found by multiplying each of the coordinates of (6, -3) by the scale factor, u, which is represented by $(6u, -3u)$, not $(6 + 1/u, -3 + 1/u)$.	D is correct because the dilation rule for P' can be found by multiplying each of the coordinates of (6, -3) by the scale factor, u, which is represented by $(6u, -3u)$.
6	F is incorrect because the slope can be found by the change in the gallons of gasoline, y, divided by the change in the number of miles driven, x, which is $-1/25$, not $1/25$. The y-intercept is 15, the number of gallons of gasoline when 0 miles were driven, not 375.	G is correct because the slope can be found by the change in the gallons of gasoline, y, divided by the change in the number of miles driven, x, which is $-1/25$. The y-intercept is 15, the number of gallons of gasoline when 0 miles were driven.	H is incorrect because the slope can be found by the change in the gallons of gasoline, y, divided by the change in the number of miles driven, x, which is $-1/25$, not 25. The y-intercept is 15, the number of gallons of gasoline when 0 miles were driven.	J is incorrect because the slope can be found by the change in the gallons of gasoline, y, divided by the change in the number of miles driven, x, which is $-1/25$, not -25. The y-intercept is 15, the number of gallons of gasoline when 0 miles were driven, not 15.
7	A is incorrect because the formula for volume of a cylinder is $V = \pi r^2 h$ and the radius = 2.5, so $V = \pi(2.5)^2 h$, not $V = \pi(2.5h)^2$.	B is incorrect because the formula for volume of a cylinder is $V = \pi r^2 h$ and the radius = 2.5, so $V = \pi(2.5)^2 h$, not $V = \pi(5h)^2$.	C is correct because the formula for the volume of a cylinder is $V = \pi r^2 h$ and the radius = 2.5, so $V = \pi(2.5)^2 h$, the radius = 2.5.	D is incorrect because the formula for volume of a cylinder is $V = \pi r^2 h$ and the radius = 2.5, so $V = \pi(2.5)^2 h$, not $V = \pi(5)^2 h$.
8	F is incorrect because it shows the values in the milliliters column, m, to be 29.57 divided by the corresponding values in the fluid ounces column, f, not multiplied.	G is incorrect because it does not show the values in the milliliters column, m, to be 29.57 multiplied by the corresponding values in the fluid ounces column, f.	H is incorrect because it does not show the values in the milliliters column, m, to be 29.57 multiplied by the corresponding values in the fluid ounces column, f.	J is correct because it shows the values in the milliliters column, m, to be 29.57 multiplied by the corresponding values in the fluid ounces column, f.

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9	A; 32.5 is correct because using the Pythagorean Theorem, $a^2 + b^2 = c^2$ gives, $26^2 + 19.5^2 = 1056.25$ and the square root of 1056.25 is 32.5.	B; Students may have added $19.5 + 26 = 45.5$ or multiplied $19.5 \times 26 = 507$.		
10	F is correct because based on the scatterplot, the best prediction of the average amount of money spent on groceries for 7 people is closest to 240.	G is incorrect because based on the scatterplot, the best prediction of the average amount of money spent on groceries for 7 people is closest to 240, not 190.	H is incorrect because based on the scatterplot, the best prediction of the average amount of money spent on groceries for 7 people is closest to 240, not 210.	J is incorrect because based on the scatterplot, the best prediction of the average amount of money spent on groceries for 7 people is closest to 240, not 300.
11	A is correct because each value of x is paired more than once with a corresponding value of y . This graph does NOT represent y as a function of x .	B is incorrect because each x value is paired only once with a corresponding y value. This graph represents y as a function of x .	C is incorrect because each x value is paired only once with a corresponding y value. This graph represents y as a function of x .	D is incorrect because each x value is paired only once with a corresponding y value. This graph represents y as a function of x .
12	F is incorrect because $x/3 - 3 = x/9 + 3$, this simplifies to $2x = 54$, and dividing both sides by 2 simplifies to $x = 27$, not 3.	G is incorrect because $x/3 - 3 = x/9 + 3$, this simplifies to $2x = 54$, and dividing both sides by 2 simplifies to $x = 27$, not 9.	H is incorrect because $x/3 - 3 = x/9 + 3$, this simplifies to $2x = 54$, and dividing both sides by 2 simplifies to $x = 27$, not 1.	J is correct because $x/3 - 3 = x/9 + 3$, this simplifies to $2x = 54$, and dividing both sides by 2 simplifies to $x = 27$.
13	A is correct because the cost for two years of college is $2(8,800) = 17,600$, so the amount the student still needs is $17,600 - 5,000 = 12,600$. A monthly deposit of \$200 is the smallest option from the table that will result in at least \$12,600 at the end of five years.	B is incorrect because the cost for two years of college is $2(8,800) = 17,600$, so the amount the student still needs is $17,600 - 5,000 = 12,600$. A monthly deposit of \$300 is not the smallest option from the table that will result in at least \$12,600 at the end of five years.	C is incorrect because the cost for two years of college is $2(8,800) = 17,600$, so the amount the student still needs is $17,600 - 5,000 = 12,600$. A monthly deposit of \$100 will result in \$12,273 according to the table, which is less than \$12,600 the student needs at the end of five years.	D is incorrect because the cost for two years of college is $2(8,800) = 17,600$, so the amount the student still needs is $17,600 - 5,000 = 12,600$. A monthly deposit of \$400 is not the smallest option from the table that will result in at least \$12,600 at the end of five years.
14	F is incorrect because the formula for lateral surface area of a cylinder is $S = 2\pi rh$ and the radius = 4.2, not 8.4, so $S = 2(\pi)(4.2)(10.9)$, which is closest to 287.6, not 575.3.	G is correct because the formula for lateral surface area of a cylinder is $S = 2\pi rh$ and the radius = 4.2, so $S = 2(\pi)(4.2)(10.9)$, which is closest to 287.6.	H is incorrect because the formula for lateral surface area of a cylinder is $S = 2\pi rh$ and the radius = 4.2, so $S = 2(\pi)(4.2)(10.9)$ which is closest to 287.6, not 398.5.	J is incorrect because the formula for lateral surface area of a cylinder is $S = 2\pi rh$ and the radius = 4.2, so $S = 2(\pi)(4.2)(10.9)$ which is closest to 287.6, not 604.1.
15	A is incorrect because the situation is represented by the equation $2.50t + 350 = 3t + 225$, not $3t + 350 = 2.50t + 225$.	B is incorrect because the situation is represented by the equation $2.50t + 350 = 3t + 225$, not $350t + 2.5 = 225t + 3$.	C is correct because the situation is represented by the equation $2.50t + 350 = 3t + 225$.	D is incorrect because the situation is represented by the equation $2.50t + 350 = 3t + 225$, which is answer choice C.
16	F is correct because the formula for compound interest is $A = P(1 + r)^t$, so $A = 2,500(1 + 0.065)^2$ which is closest to 2,835.56.	G is incorrect because the formula for compound interest is $A = P(1 + r)^t$, so $A = 2,500(1 + 0.065)^2$ which is closest to 2,835.56, not 2,513.00.	H is incorrect because the formula for compound interest is $A = P(1 + r)^t$, so $A = 2,500(1 + 0.065)^2$ which is closest to 2,835.56, not 2,662.50.	J is incorrect because the formula for compound interest is $A = P(1 + r)^t$, so $A = 2,500(1 + 0.065)^2$ which is closest to 2,835.56, not 2,825.00.

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17	A is incorrect because $AE/XY = CD/VZ$ does not represent a true proportion of the lengths of the corresponding sides of the given similar figures.	B is incorrect because $AB/VW = YZ/DE$ does not represent a true proportion of the lengths of the corresponding sides of the given similar figures.	C is incorrect because $BC/XY = DE/YZ$ does not represent a true proportion of the lengths of the corresponding sides of the given similar figures.	D is correct because $AB/VW = CD/XY$ represents a true proportion of the lengths of the corresponding sides of the given similar figures.
18	F is incorrect because 0.00165 is written as 1.65×10^{-3} in scientific notation, not 165×10^{-5} .	G is correct because 0.00165 is written as 1.65×10^{-3} in scientific notation.	H is incorrect because 0.00165 is written as 1.65×10^3 in scientific notation, not 16.5×10^{-4} .	J is incorrect because 0.00165 is written as 1.65×10^{-3} in scientific notation, not 0.165×10^{-2} .
19	A is correct because the graph shows the cost of 5 dollars for every pound of pecan, which is represented by the function $y = 5x$.	B is incorrect because the graph shows the cost of 5 dollars for every pound of pecan, which is represented by the function $y = 5x$, not $y = 1/5 x$.	C is incorrect because the graph shows the cost of 5 dollars for every pound of pecan, which is represented by the function $y = 5x$, not $y = 2x$.	D is incorrect because the graph shows the cost of 5 dollars for every pound of pecan, which is represented by the function $y = 5x$, not $y = 1/2x$.
20	F is incorrect because the dilation rule $(1/4x, 1/4y)$ creates a pentagon that is smaller than the original pentagon, not a larger pentagon. The $1/4$ scale factor is less than 1, not greater than 1.	G is correct because the dilation rule $(1/4x, 1/4y)$ creates a pentagon that is smaller than the original pentagon. The $1/4$ scale factor is less than 1.	H is incorrect because the dilation rule $(1/4x, 1/4y)$ creates a pentagon that is smaller than the original pentagon. The $1/4$ scale factor is less than 1, not greater than 1.	J is incorrect because the dilation rule $(1/4x, 1/4y)$ creates a pentagon that is smaller than the original pentagon, not a larger pentagon. The $1/4$ scale factor is less than 1.
21	A is correct because the formula for simple interest is $I = Prt$, so $I = 2,500(0.0475)(1.5)$, which is about 178.13. This option has the least amount of interest for the loan.	B is incorrect because the formula for simple interest is $I = Prt$, so $I = 2,500(0.0475)(1.5)$, which is about 178.13. This option has the least amount of interest for the loan, not $2,500(0.04)(2.5) = 250$.	C is incorrect because the formula for simple interest is $I = Prt$, so $I = 2,500(0.0475)(1.5)$, which is about 178.13. This option has the least amount of interest for the loan, not $2,500(0.0425)(2) = 212.5$.	D is incorrect because the formula for simple interest is $I = Prt$, so $I = 2,500(0.0475)(1.5)$, which is about 178.13. This option has the least amount of interest for the loan, not $2,500(0.0450)(3) = 337.5$.
22	F is incorrect because the Pythagorean Theorem is $a^2 + b^2 = c^2$, so $102 + 82 = c^2$, which simplifies to $164 = c^2$, and the square root of 164 is closest to 13, not 18.	G is incorrect because the Pythagorean Theorem is $a^2 + b^2 = c^2$, so $102 + 82 = c^2$, which simplifies to $164 = c^2$, and the square root of 164 is closest to 13, not 6.	H is correct because the Pythagorean Theorem is $a^2 + b^2 = c^2$, so $102 + 82 = c^2$, which simplifies to $164 = c^2$, and the square root of 164 is closest to 13.	J is incorrect because the Pythagorean Theorem is $a^2 + b^2 = c^2$, so $102 + 82 = c^2$, which simplifies to $164 = c^2$, and the square root of 164 is closest to 13, not 9.
23	A; 6 is correct because if the perimeter is equal to the area then $2l + 2w = lw$, so $2l + 2(3) = l(3)$, which simplifies to $6 = l$.	B; Students may have multiplied $4 \times 3 = 12$.		
24	F is incorrect because the formula for the volume of a cone is $V = (1/3)\pi r^2 h$, so $V = (1/3)(\pi)(2.8125)^2(7.5)$ which is closest to 62.13, not 186.38.	G is incorrect because the formula for the volume of a cone is $V = (1/3)\pi r^2 h$, so $V = (1/3)(\pi)(2.8125)^2(7.5)$ which is closest to 62.13, not 248.50.	H is incorrect because the formula for the volume of a cone is $V = (1/3)\pi r^2 h$, so $V = (1/3)(\pi)(2.8125)^2(7.5)$ which is closest to 62.13, not 745.51.	J is correct because the formula for the volume of a cone is $V = (1/3)\pi r^2 h$, so $V = (1/3)(\pi)(2.8125)^2(7.5)$ which is closest to 62.13.

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25	A is incorrect because two of the ordered pairs have the same x value. To be a function, every x value is paired with exactly one y value.	B is correct because each x value is paired only once with a corresponding y value. To be a function, every x value is paired with exactly one y value.	C is incorrect because two of the ordered pairs have the same x value. To be a function, every x value is paired with exactly one y value.	D is incorrect because all of the ordered pairs have the same x value. To be a function, every x value is paired with exactly one y value.
26	F is incorrect because the combined area of the smaller squares, $3^2 + 4^2$, is the same as the area of the largest square, 25. These squares support this statement.	G is incorrect because the combined area of the smaller squares, $5^2 + 12^2$, is the same as the area of the largest square, 13^2 . These squares support this statement.	H is correct because the combined area of the smaller squares, $9^2 + 144$, is not the same as the area of the largest square, 21^2 . These squares do NOT support this statement.	J is incorrect because the combined area of the smaller squares, $6^2 + 64$, is the same as the area of the largest square, 100. These squares support this statement.
27	A is incorrect because after the reflection across the y-axis, the center of the new circle will be at $(-x, y)$, not (x, y) .	B is incorrect because after the reflection across the y-axis, the center of the new circle will be at $(-x, y)$, not $(x, -y)$.	C is correct because after a reflection across the y-axis, the center of the new circle will be at $(-x, y)$.	D is incorrect because after the reflection across the y-axis, the center of the new circle will be at $(-x, y)$, not $(-x, -y)$.
28	F is correct because the graph shows a unit rate of 2.75, which models the same rate as the cost to dry-clean each shirt, $16.50/6 = 2.75$.	G is incorrect because the graph shows a unit rate of 16.50, which does not model the same rate as the cost to dry-clean each shirt, $16.50/6 = 2.75$.	H is incorrect because the graph shows a unit rate of 10.50, which does not model the same rate as the cost to dry-clean each shirt, $16.50/6 = 2.75$.	J is incorrect because the graph shows a unit rate of 22.50, which does not model the same rate as the cost to dry-clean each shirt, $16.50/6 = 2.75$.
29	A is incorrect because $\sqrt{0.02}$ is about 0.141, which is between $1/8 = 0.125$ and $18\% = 0.18$, not $1/5 = 0.2$.	B is incorrect because $\sqrt{0.02}$ is about 0.141, which is between $1/8 = 0.125$ and $18\% = 0.18$, not 1.6.	C is incorrect because $\sqrt{0.02}$ is about 0.141, which is between $1/8 = 0.125$ and $18\% = 0.18$, not 0.09.	D is correct because $\sqrt{0.02}$ is about 0.141, which is between $1/8 = 0.125$ and $18\% = 0.18$.
30	F is incorrect because the ratios simplify to $7/8 = 6/9$, which do not show the correct slope for segments \overline{JL} and \overline{MP} .	G is correct because the ratios simplify to $-4/3 = -12/9$, which show the correct slope for segments \overline{JL} and \overline{MP} .	H is incorrect because the ratios simplify to $4/11 \neq -3/18$, which do not show the correct slope for segments \overline{JL} and \overline{MP} .	J is incorrect because the ratios simplify to $3/4 \neq 9/12$, which do not show the correct slope for segments \overline{JL} and \overline{MP} .
31	A is incorrect because the formula for the area of a square is $A = s^2$, so $87.5 = s^2$, the side length is the square root of 87.5, which is closest to 9, not 22.	B is incorrect because the formula for the area of a square is $A = s^2$, so $87.5 = s^2$, the side length is the square root of 87.5, which is closest to 9, not 44.	C is correct because the formula for the area of a square is $A = s^2$, so $87.5 = s^2$, the side length is the square root of 87.5, which is closest to 9.	D is incorrect because the formula for the area of a square is $A = s^2$, so $87.5 = s^2$, the side length is the square root of 87.5, which is closest to 9, not 7.
32	F is incorrect because based on the scatterplot, the best prediction of the resting heart of a person exercising at an average of 8 hours each week is 50 beats per minute, not 30 beats per minute.	G is correct because based on the scatterplot, the best prediction of the resting heart of a person exercising at an average of 8 hours each week is 50 beats per minute.	H is incorrect because based on the scatterplot, the best prediction of the resting heart of a person exercising at an average of 8 hours each week is 50 beats per minute, not 55 beats per minute.	J is incorrect because based on the scatterplot, the best prediction of the resting heart of a person exercising at an average of 8 hours each week is 50 beats per minute, not 60 beats per minute.

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33	A is correct because the Pythagorean Theorem is $a^2 + b^2 = c^2$, so $12^2 + x^2 = 39^2$ which simplifies to $x^2 = 1,377$ and the square root of 1,377 is closest to 37.1.	B is incorrect because the Pythagorean Theorem is $a^2 + b^2 = c^2$, so $12^2 + x^2 = 39^2$ which simplifies to $x^2 = 1,377$ and the square root of 1,377 is closest to 37.1, not 40.8.	C is incorrect because the Pythagorean Theorem is $a^2 + b^2 = c^2$, so $12^2 + x^2 = 39^2$ which simplifies to $x^2 = 1,377$ and the square root of 1,377 is closest to 37.1, not 27.	D is incorrect because the Pythagorean Theorem is $a^2 + b^2 = c^2$, so $12^2 + x^2 = 39^2$ which simplifies to $x^2 = 1,377$ and the square root of 1,377 is closest to 37.1, not 51.
34	F; 40 is correct because if Nicki can make 4 baskets in $\frac{1}{2}$ hour, she can make 40 baskets in 8 hours.	G; Students may have multiplied 4 baskets times 5 hours to get 20 or multiplied 2 times 5 to get 10.		
35	A is incorrect because the formula for simple interest is $I = Prt$ and the interest is $6,500 - 5,000 = 1,500$, so $1,500 = 5,000(r)(4)$, and dividing both sides by 20,000 gives $r = 0.075 = 7.5\%$, not 5.8%.	B is correct because the formula for simple interest is $I = Prt$ and the interest is $6,500 - 5,000 = 1,500$, so $1,500 = 5,000(r)(4)$, and dividing both sides by 20,000 gives $r = 0.075 = 7.5\%$.	C is incorrect because the formula for simple interest is $I = Prt$ and the interest is $6,500 - 5,000 = 1,500$, so $1,500 = 5,000(r)(4)$, and dividing both sides by 20,000 gives $r = 0.075 = 7.5\%$, not 3.3%.	D is incorrect because the formula for simple interest is $I = Prt$ and the interest is $6,500 - 5,000 = 1,500$, so $1,500 = 5,000(r)(4)$, and dividing both sides by 20,000 gives $r = 0.075 = 7.5\%$, not 1.9%.
36	F is incorrect because the coordinates of F'G'H'J' are found by multiplying the coordinates of FGHIJ by $\frac{1}{4}$ which is described by the dilation rule $(x, y) \rightarrow (1.4x, 1.4y)$, not $(x, y) \rightarrow (5/7x, 5/7y)$.	G is incorrect because the coordinates of F'G'H'J' are found by multiplying the coordinates of FGHIJ by $\frac{1}{4}$ which is described by the dilation rule $(x, y) \rightarrow (1.4x, 1.4y)$, not $(x, y) \rightarrow (x + 1, y + 2)$.	H is correct because the coordinates of F'G'H'J' are found by multiplying the coordinates of FGHIJ by $\frac{1}{4}$ which is described by the dilation rule $(x, y) \rightarrow (1.4x, 1.4y)$.	J is incorrect because the coordinates of F'G'H'J' are found by multiplying the coordinates of FGHIJ by $\frac{1}{4}$ which is described by the dilation rule $(x, y) \rightarrow (1.4x, 1.4y)$, not $(x, y) \rightarrow (x - 2, y + 1)$.
37	A is correct because the amount of money can be found by multiplying 10 times the number of weeks, n , and adding her saving of 25, which is represented by the function $t = 10n + 25$.	B is incorrect because the amount of money can be found by multiplying 10 times the number of weeks, n , and adding her saving of 25, which is represented by the function $t = 10n + 25$, not $t = 25n + 10$.	C is incorrect because the amount of money can be found by multiplying 10 times the number of weeks, n , and adding her saving of 25, which is represented by the function $t = 10n + 25$, not $t = 35n$.	D is incorrect because the amount of money can be found by multiplying 10 times the number of weeks, n , and adding her saving of 25, which is represented by the function $t = 10n + 25$, not $t = 15n$.
38	F; 237.5 is correct because the formula for the total surface area of a rectangular prism is $S = Ph + 2B$ which is $25(6.5) + 2(37.5) = 237.5$.	G; Students may have multiplied $7.5(5)(6.5) = 243.75$ or $(7.5 + 5 + 6.5)(4) = 76$.		
39	A is correct because the graph describes the profit to be \$7.50 for each box.	B is incorrect because the graph describes the profit to be \$7.50 for each box, not 10.00 for each box.	C is incorrect because the graph describes the profit to be \$7.50 for each box, not 4.00 for 30 boxes.	D is incorrect because the graph describes the profit to be \$7.50 for each box, not 3.00 for 4 boxes.

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40	F is incorrect because the scatterplot models a positive linear association, not a non-linear association, between the lanes rented and the number of people who bowl.	G is incorrect because the scatterplot models a positive linear association, not a negative linear association, between the lanes rented and the number of people who bowl.	H is incorrect because the scatterplot models a positive linear association, not a no apparent association, between the lanes rented and the number of people who bowl.	J is correct because the scatterplot models a positive linear association between the lanes rented and the number of people who bowl.
41	A is incorrect because the formula for volume of a cylinder is $V = \pi r^2 h$, so $V = \pi(3)^2(10.5)$ which is closest to 296.88, not 254.47.	B is correct because the formula for volume of a cylinder is $V = \pi r^2 h$, so $V = \pi(3)^2(10.5)$ which is closest to 296.88.	C is incorrect because the formula for volume of a cylinder is $V = \pi r^2 h$, so $V = \pi(3)^2(10.5)$ which is closest to 296.88, not 395.84.	D is incorrect because the formula for volume of a cylinder is $V = \pi r^2 h$, so $V = \pi(3)^2(10.5)$ which is closest to 296.88, not 197.92.
42	F is incorrect because the two lines appear to intersect at day 18, not day 15.	G is incorrect because the two lines appear to intersect at day 18, not day 48.	H is incorrect because the two lines appear to intersect at day 18, not day 33.	J is correct because the two lines appear to intersect at day 18.