Points	Problem	Solve for x. Check you answer to make sure you are correct!
1	A	$\frac{x}{2} - 9 = -1$
2	B	$-\frac{2}{3}x + 4 = -66$
2	C	$\frac{4x}{5} - 12 = -32$
2	D	$-\frac{3}{4}(2x + 5) = 6$
3	E	$5 = -\frac{2}{3}(2x - 6) - 3$
3	F	$-3(2x - 5) = 6x - 15$
3	G	$-\frac{2}{3}(6 - 2x) = 6 - x$
4	H	$x - 12 = \frac{5x + 2}{3}$
4	I	$\frac{2x - 5}{5} - 3 = 3x + 4$
5	J	$\frac{1}{4}(3x - 9) = \frac{3}{2}(x + 6)$

Answers

Problem		
A	x = 16	$\frac{x}{2} - 9 = -1$
B	x = 105	$-\frac{2}{3}x + 4 = -66$
C	x = -25	$\frac{4x}{5} - 12 = -32$
D	x = -13/2	$-\frac{3}{4}(2x + 5) = 6$
E	x = -3	$5 = -\frac{2}{3}(2x - 6) - 3$
F	x = 5/2	$-3(2x - 5) = 6x - 15$
G	x = 30/7	$-\frac{2}{3}(6 - 2x) = 6 - x$
H	x = -19	$x - 12 = \frac{5x + 2}{3}$
I	x = -40/13	$\frac{2x - 5}{5} - 3 = 3x + 4$
J	x = -15	$\frac{1}{4}(3x - 9) = \frac{3}{2}(x + 6)$

Points	Problem	Write the equation of the line containing the two points listed.
1	A	(12 , 10) and (12 , 5)
2	B	(-5 , 4) and (4 , -23)
2	C	(4 , 9) and (-2 , 9/2)
3	D	(-3 , 0) and (1 , -6)
3	E	(1 , -5) and (10 , 23/2)
3	F	(-1 , -2) and (2 , 6)
3	G	(-1 , -1) and (4 , 3)
3	H	(6 , -4) and (-1 , 2)
4	I	(-1 , 10) and (12 , -4)
5	J	(1/4 , 2) and (-5 , 2/3)

Answers

Problem		
A	$x = 12$	(12 , 10) and (12 , 5)
B	$y = -3x - 11$	(-5 , 4) and (4 , -23)
C	$y = \frac{3}{4}x + 6$	(4 , 9) and (-2 , 9/2)
D	$y = -\frac{3}{2}x - \frac{9}{2}$	(-3 , 0) and (1 , -6)
E	$y = \frac{11}{6}x - \frac{41}{6}$	(1 , -5) and (10 , 23/2)
F	$y = \frac{8}{3}x + \frac{2}{3}$	(-1 , -2) and (2 , 6)
G	$y = \frac{4}{5}x - \frac{1}{5}$	(-1 , -1) and (4 , 3)
H	$y = -\frac{6}{7}x + \frac{8}{7}$	(6 , -4) and (-1 , 2)
I	$y = -\frac{14}{13}x + \frac{116}{13}$	(-1 , 10) and (12 , -4)
J	$y = \frac{16}{63}x + \frac{122}{63}$	(1/4 , 2) and (-5 , 2/3)

Points	Problem	Determine whether the relationship between x and y is linear, inverse, or neither. Write an equation for the relationship if it is linear or inverse. If the relationship is "neither" explain why.
1	A	x: 15, 17, 21, 23 y: 62, 47, 17, 2
1	B	x: 1, 2, 3, 4 y: 24, 12, 8, 6
2	C	x: 5, -5, -13, -21 y: -2, 3, 7, 11
2	D	x: 20, 24, 30, 36 y: 18, 15, 12, 10
3	E	x: 2, 2, 2, 2 y: -5, -1, 7, 20
3	F	x: 10, 20, 30, 40 y: 4, 16, 32, 64
4	G	x: 560, 280, 140, 70 y: 2, 4, 8, 16
4	H	x: -10, -5, 5, 10 y: $\frac{44}{7}$, $\frac{23}{7}$, $\frac{-19}{7}$, $\frac{-40}{7}$
5	I	x: 30, 45, 51, 171 y: 115, 110, 108, 68
5	J	x: 1, 2, 3, 5 y: $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{6}$, $\frac{1}{10}$

Answers

Problem		
A	**Linear** $y = -\frac{15}{2}x + \frac{349}{2}$	x: 15, 17, 21, 23 y: 62, 47, 17, 2
B	**Inverse** $y = \frac{24}{x}$	x: 1, 2, 3, 4 y: 24, 12, 8, 6
C	**Linear** $y = \frac{1}{2}x - \frac{9}{2}$	x: 5, -5, -13, -21 y: -2, 3, 7, 11
D	**Inverse** $y = \frac{360}{x}$	x: 20, 24, 30, 36 y: 18, 15, 12, 10
E	**Linear** $x = 2$	x: 2, 2, 2, 2 y: -5, -1, 7, 20
F	**Neither** • No constant slope between points • $xy \neq$ constant	x: 10, 20, 30, 40 y: 4, 16, 32, 64
G	**Inverse** $y = \frac{1120}{x}$	x: 560, 280, 140, 70 y: 2, 4, 8, 16
H	**Linear** $y = -\frac{3}{5}x + \frac{2}{7}$	x: -10, -5, 5, 10 y: $\frac{44}{7}$, $\frac{23}{7}$, $\frac{-19}{7}$, $\frac{-40}{7}$
I	**Linear** $y = -\frac{1}{3}x + 125$	x: 30, 45, 51, 171 y: 115, 110, 108, 68
J	**Inverse** $y = \frac{1}{2x}$	x: 1, 2, 3, 5 y: $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{6}$, $\frac{1}{10}$

For each problem, describe what kind of relationship the scenario represents, define your variables, and write an equation to model the relationship.

Points	Problem	
1	A	The local food bank has 500 bags of oranges. The oranges will be split evenly among all the families who sign up. Write an equation to represent the number of bags each family gets.
2	B	The local food bank has 500 bags of oranges. Each family can take 2 bags. Write an equation to represent the number of bags in stock at the food bank.
3	C	Carl wants to save $1,000 for a trip. Write an equation showing the relationship between the amount saved per week and the number of weeks.
3	D	Students in Mr. Einstein's science class complain about the lengths of his tests. He argues that a test with more questions is better for students because each question is worth fewer points. All of Mr. Einstein's tests are worth 100 points. Each question is worth the same number of points. Write an equation for the relationship between the number of questions and the points per question.
3	E	Dr. Peltier's class decides to paint fences for community service day. There are 32 panels in a fence and each student paints one panel. Write an equation modeling the relationship between the number of students and the number of panels left to paint.
3	F	A marathon is a 26.2 mile race. The best marathon runners can complete the race in a little more than 2 hours. Write an equation for the relationship between time and average running speed for a marathon.
4	G	Dr. Peltier's class decides to paint fences for community service day. There are 32 panels in a fence and it takes each student 1 hour to paint a panel. The students paint at the same rate. Write an equation modeling the relationship between the number of students and number of panels they each painted.
5	H	A marathon is a 26.2 mile race. Jennifer can run a 12 minute mile. Write an equation modeling the relationship between how long Jennifer has run and the distance she has left to run in the marathon.

Answers

Problem		
A	**Inverse variation** y → number of bags x → number of families $y = \frac{500}{x}$	The local food bank has 500 bags of oranges. The oranges will be split evenly among all the families who sign up. Write an equation to represent the number of bags each family gets.
B	**Linear** x → # of families y → # of bags in stock y=500-2x	The local food bank has 500 bags of oranges. Each family can take 2 bags. Write an equation to represent the number of bags in stock at the food bank.
C	**Inverse variation** y → amount saved per wk x → number of weeks $y = \frac{1000}{x}$	Carl wants to save $1,000 for a trip. Write an equation showing the relationship between the amount saved per week and the number of weeks.
D	**Inverse variation** y → number of questions x → points per question $x = \frac{100}{y}$	Students in Mr. Einstein's science class complain about the lengths of his tests. He argues that a test with more questions is better for students because each question is worth fewer points. All of Mr. Einstein's tests are worth 100 points. Each question is worth the same number of points. Write an equation for the relationship between the number of questions and the points per question.
E	**Linear** x → number of students y → number of panels y = 32 – x	Dr. Peltier's class decides to paint fences for community service day. There are 32 panels in a fence and each student paints one panel. Write an equation modeling the relationship between the number of students and the number of panels left to paint.
F	**Inverse variation** y → ave. running speed x → time $y = \frac{26.2}{x}$	A marathon is a 26.2 mile race. The best marathon runners can complete the race in a little more than 2 hours. Write an equation for the relationship between time and average running speed for a marathon.
G	**Inverse** y → number of students x → panels they each paint xy = 32	Dr. Peltier's class decides to paint fences for community service day. There are 32 panels in a fence and it takes each student 1 hour to paint a panel. The students paint at the same rate. Write an equation modeling the relationship between the number of students and number of panels they each painted.
H	**Linear** y → distance left x → time (in hours) y = 26.2 – 5x	A marathon is a 26.2 mile race. Jennifer can run a 12 minute mile. Write an equation modeling the relationship between how long Jennifer has run and the distance she has left to run in the marathon.