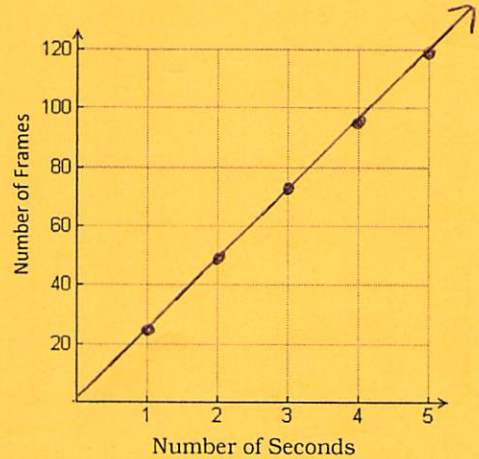


5-5, 6 Direct and Inverse Variation

Direct Variation

As you watch a movie, 24 individual pictures, or frames, flash on the screen each second. Model the relationship between the number of seconds (x) and the number of frames (y).

X Number of Seconds	Y Number of Frames	$\frac{Y}{X}$	X · Y
1	24	$\frac{24}{1} = 24$	24
2	48	$\frac{48}{2} = 24$	48
3	72	$\frac{72}{3} = 24$	72
4	96	$\frac{96}{4} = 24$	96
5	120	$\frac{120}{5} = 24$	120

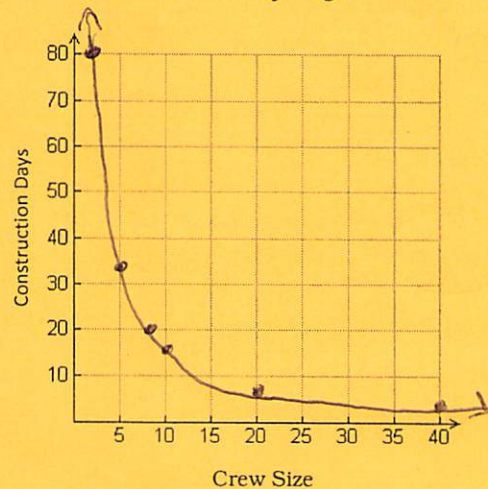


Constant of Variation: 24

Inverse Variation

Suppose you are part of a volunteer crew constructing affordable housing. Building a house takes a total of 160 workdays. The crew size (x) varies inversely with the construction days (y).

X Crew Size	Y Construction Days	$\frac{Y}{X}$	X · Y
2	80	40	160
5	32	6.4	160
8	20	2.5	160
10	16	1.6	160
20	8	0.4	160
40	4	0.1	160



Constant of Variation: 160

The Constant of Variation for a Direct Variation is $\frac{Y}{X}$

The Constant of Variation for an Inverse Variation is $X \cdot Y$

Beginner:

1.

X	Y	$\frac{Y}{X}$	X · Y
3	-18	-6	
6	-36	-6	
9	-54	-6	

Direct Inverse Neither
 Constant of Variation -6

2.

X	Y	$\frac{Y}{X}$	X · Y
6	5	.83	30
8	4	.5	32
10	3	.3	30

Direct Inverse Neither
 Constant of Variation _____

Intermediate:

3.

x	2	7	10
y	35	10	7

Direct Inverse Neither
 Constant of Variation 70

4.

x	5	6	8
y	55	66	88

Direct Inverse Neither
 Constant of Variation 11

5.

x	2	8	16
y	9	36	72

Direct Inverse Neither
 Constant of Variation 4.5

Advanced:

6. $2y = 8x$

X	Y	$\frac{Y}{X}$	X · Y
1	4	4	4
6	24	4	144
10	40	4	400

Direct Inverse Neither
 Constant of Variation 4

7. $y = \frac{40}{x}$

X	Y	$\frac{Y}{X}$	X · Y
1	40	40	40
4	10	2.5	40
10	4	.4	40

Direct Inverse Neither
 Constant of Variation 40

8. $5y - 10x = 15$

X	Y	$\frac{Y}{X}$	X · Y
7	2	3.5	14
8 9	3	3	27
11	4	2.75	44

Direct Inverse Neither
 Constant of Variation _____

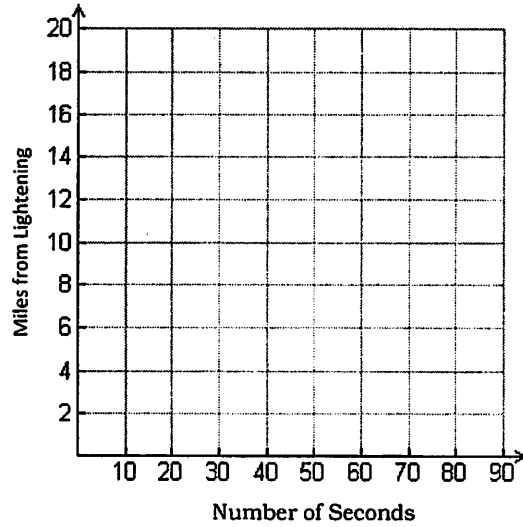
9. $3x - 9y = 0$

X	Y	$\frac{Y}{X}$	X · Y
3 3	1 1	$\frac{1}{3}$	3
12	4	$\frac{1}{3}$	48
24	8	$\frac{1}{3}$	192

Direct Inverse Neither
 Constant of Variation $\frac{1}{3}$

1. Your distance from lightening varies directly with the time it takes you to hear thunder. If you hear thunder 10 seconds after you see lightening, you are about 2 miles from the lightning. Model the situation with a table and graph for the number of seconds (x) and the miles from lightening (y).

X Number of Seconds	Y Miles from Lightening	$\frac{Y}{X}$
10	2	
30		
45		
60		
90		



Constant of Variation: _____

Determine whether the following tables represent direct or inverse variation. If so, determine the constant of variation.

2.

X	Y	$\frac{Y}{X}$	$X \cdot Y$
-8	24		
-4	12		
-2	6		

Direct Inverse Neither

Constant of Variation _____

3.

X	Y	$\frac{Y}{X}$	$X \cdot Y$
2	18		
6	6		
12	3		

Direct Inverse Neither

Constant of Variation _____

4.

x	3	6	24
y	16	8	2

Direct Inverse Neither

Constant of Variation _____

5.

x	2	4	6
y	8	16	32

Direct Inverse Neither

Constant of Variation _____

6.

x	2	3	9
y	18	12	4

Direct Inverse Neither

Constant of Variation _____