Exercise 6.6

[Part 1] *Find the ratio* $\frac{rise}{run}$ *for each pair of points.*

1. $P(2,5)$ and $Q(6,8)$
2. $P(1,4)$ and $Q(7,2)$
3. $P(-5,8)$ and $Q(3,10)$
4. $P(-2,-5)$ and $Q(2,3)$
5. $P(-1,-7)$ and $Q(-3,-11)$
6. $P(-4,-3)$ and $Q(-2,6)$
7. $P(1,7)$ and $Q(-3,-8)$
8. $P(0,0)$ and $Q(-3,4)$

[Part 2]

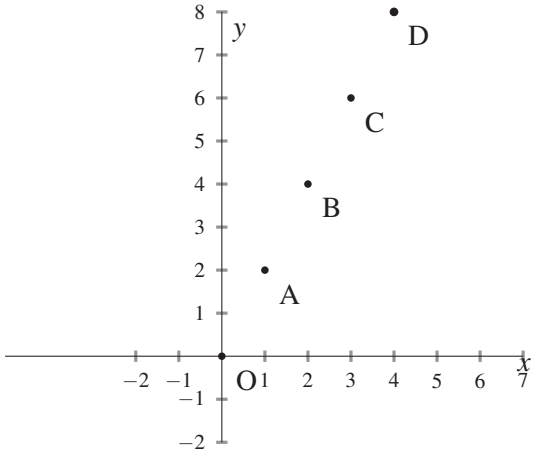
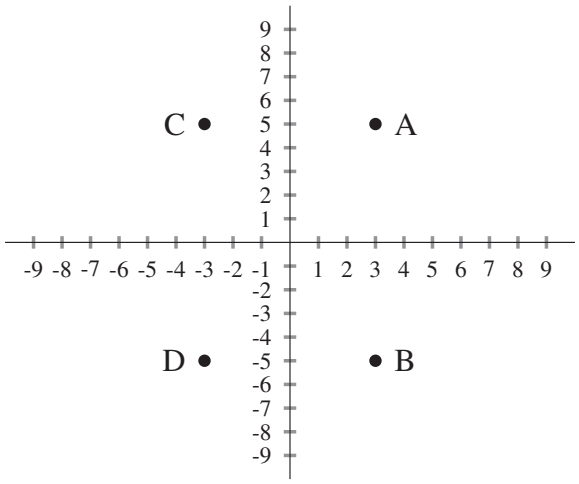


FIGURE 6.13. Graph of $y = 2x$, domain $= \{0,1,2,3,4\}$

1. Based on the appearance of Figure 6.13, complete the following table of the ratio $\frac{\text{rise}}{\text{run}}$ for each pair of points.

	0	**A**	**B**	**C**	**D**
0	undefined	$\frac{2}{1} = 2$	$\frac{4}{2} = 2$	$\frac{6}{3} = 2$	$\frac{8}{4} = 2$
A		undefined			
B			undefined		
C				undefined	
D					undefined

2. What is notable about the $\frac{\text{rise}}{\text{run}}$ that you filled in?
3. Why does the word "undefined" appear in certain cells of the table?



(**4**) Answer should look the same as Figure 6.4 page 152.

Answers to Exercise 6.6

[Part 1] (**1**) $\frac{3}{4}$ (**2**) $\frac{-2}{6} = \frac{-1}{3}$ (**3**) $\frac{2}{8} = \frac{1}{4}$ (**4**) $\frac{8}{4} = 2$ (**5**) $\frac{-4}{-2} = 2$
(**6**) $\frac{9}{2}$ (**7**) $\frac{-15}{-4} = \frac{15}{4}$ (**8**) $\frac{4}{-3} = \frac{-4}{3}$

[Part 2]

(**1**)

	0	**A**	**B**	**C**	**D**
0	undefined	$\frac{2}{1} = 2$	$\frac{4}{2} = 2$	$\frac{6}{3} = 2$	$\frac{8}{4} = 2$
A		undefined	$\frac{2}{1} = 2$	$\frac{4}{2} = 2$	$\frac{6}{3} = 2$
B			undefined	$\frac{2}{1} = 2$	$\frac{4}{2} = 2$
C				undefined	$\frac{2}{1} = 2$
D					undefined

(**2**) The ratio $\frac{\text{rise}}{\text{run}}$ equals 2 whenever it is defined. (**3**) The run is 0, so the ratio $\frac{\text{rise}}{\text{run}}$ is undefined because division by zero is undefined.