Rise Over Run — Answer Key

Sample answers. Accept equivalent forms (for example, −6/4 for −3/2) and other correct reasoning.

Part A · Count It

1. (−2, −3) to (1, 3): rise **6**, run **3**, slope **2**

2. (−3, 2) to (3, −2): rise **−4**, run **6**, slope $-\frac{2}{3}$

3. (−3, 3) to (−1, −3): rise **−6**, run **2**, slope **−3**

4. (−3, −1) to (3, 1): rise **2**, run **6**, slope $\frac{1}{3}$

Part B · Use the Formula

5. $\frac{11-3}{6-2} = \frac{8}{4} = 2$

6. $\frac{-4-4}{3-(-1)} = \frac{-8}{4} = -2$

7. $\frac{7-5}{4-0} = \frac{2}{4} = \frac{1}{2}$

8. $\frac{2-2}{3-(-5)} = \frac{0}{8} = 0$ (horizontal line)

9. $\frac{6-(-1)}{4-4} = \frac{7}{0}$ = **undefined** (vertical line)

10. $\frac{-9-(-3)}{-2-(-6)} = \frac{-6}{4} = -\frac{3}{2}$

Part C · Slope From a Table

11. y goes up 4 each time x goes up 1: $m = 4$

12. $\frac{7-10}{0-(-2)} = \frac{-3}{2}$: $m = -\frac{3}{2}$

13. $\frac{8-2}{3-1} = \frac{6}{2}$: $m = 3$; ? = 14 + 6 = **20**

Part D · Slope in the Real World

14. (a) $\frac{30}{300} = \frac{1}{10}$

(b) **Yes, too steep**: $^1/_{10} = 0.1$ is greater than $^1/_{12} \approx 0.083$.

(c) 30 × 12 = **360 inches (30 feet)**

15. (a) $\frac{6}{100} = \frac{3}{50}$

(b) 1,500 × $^6/_{100}$ = **90 feet**

(c) **The roof**: $^6/_{12} = 0.5$ is much greater than $^6/_{100} = 0.06$.

16. (a) $\frac{80-20}{6-0} = \frac{60}{6} = 10$

(b) **dollars per week**

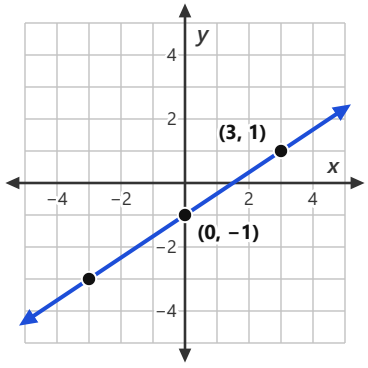
(c) She **saves $10 each week**.

(d) At **20**: she **started with $20**.

(e) $y = 10x + 20$; after 12 weeks, 10(12) + 20 = **$140**

Part E · Slope-Intercept Form

17. Line through **(−3, −3)**, **(0, −1)**, and **(3, 1)**:



18. $y = -3x + 4$; it **falls** (negative slope).

Part F · Think Deeper

19. Horizontal: **rise = 0**, and 0 ÷ run = 0. Vertical: **run = 0**, and dividing by 0 is impossible, so the slope is undefined.

20. Line 1: $\frac{5-1}{2-0} = 2$. **Line 2 also has slope 2**: parallel lines are equally steep, so their slopes are equal.

21. **No.** $\frac{11-3}{6-2} = \frac{8}{4} = 2$ and $\frac{3-11}{2-6} = \frac{-8}{-4} = 2$. Switching the points flips the sign of both the rise and the run, so the slope stays the same. Just use the same order on top and bottom.