KEY

# Chapter 5 Test Study Guide

**For questions 1 and 2, find the slope of the line passing through each pair of points. If the slope is undefined, write "undefined".**

1. (-8, 7) and (5, -2)

$\frac{-2-7}{5-(+8)} = \frac{-9}{13}$

2. (5, 9) and (5, -3)

$\frac{-3-9}{5-5} = \frac{-12}{0}$ = undefined

3. Find the value of r so that the line through (-4, 3) and (r, -3) has a slope of $\frac{2}{3}$.

$\frac{-3-3}{r-(+4)} = \frac{2}{3}$ $-18 = 2r + 8$ $\frac{-26}{2} = \frac{2r}{2}$ $r = -13$

4. Find the value of *r* so that the line through (4, 5) and (6, r) has a slope of $\frac{5}{8}$.

$\frac{r-5}{6-4} = \frac{5}{8}$ $10 = 8r - 40$ $+40 \quad +40$ $\frac{50}{8} = \frac{8r}{8}$ $r = \frac{25}{4}$ or 6.25

5. In 1990, there were approximately 35,000 people in Lancaster. Five years later, the population was 38,452. Find the rate of change in the population.

(1990, 35000) (1995, 38,452)

$\frac{38452 - 35000}{1995 - 1990} = \frac{3452}{5} = 690.4$ ppl/yr

6. Write $y + 4 = -\frac{2}{3}(x - 9)$ in standard form.

$y + 4 = -\frac{2}{3}x + 6$ $-4 \quad -4$ $y = -\frac{2}{3}x + 2$ $+\frac{2}{3}x \quad +\frac{2}{3}x$

$3\left(\frac{2}{3}x + y = 2\right)$ $2x + 3y = 6$

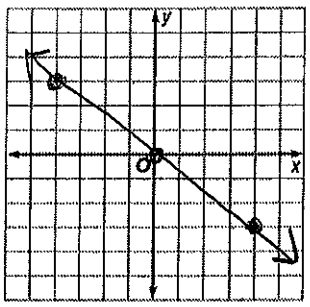
7. If an ostrich can run 15 kilometers in 15 minutes, how many kilometers can it run in an hour?

$\frac{15\text{KM}}{15\text{ min}} \times \frac{X}{60\text{ min}}$ $15X = 900$ $\frac{15X}{15} = \frac{900}{15}$ $X = 60\text{ km}$

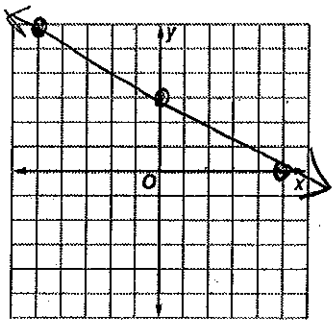
8. Write the point-slope form of an equation of the line that has slope $-\frac{3}{5}$ and passes through (2, 1)

$y - 1 = -\frac{3}{5}(x - 2)$

9. Graph $y = -\frac{3}{4}x$.




10. Graph a line whose x-intercept is 5 and whose slope is $-\frac{3}{5}$.




11. Write an equation in standard form of the line that passes through (2, -3) and (-3, 7).

$\frac{7-(-3)}{-3-2} = \frac{10}{-5} = -2$ $y = -2x + 1$ $+2x \quad +2x$

$-3 = -2(2) + b$ $-3 = -4 + b$ $+4 \quad +4$ $1 = b$

$2x + y = 1$

12. Write the point-slope form of the equation for the line that has x-intercept -3 and y-intercept -2.

(-3, 0) (0, -2)

$\frac{-2-0}{0-(-3)} = -\frac{2}{3}$

$y - 0 = -\frac{2}{3}(x + 3)$ OR $y + 2 = -\frac{2}{3}(x - 0)$

# Chapter 5 Test Study Guide

**For questions 13 – 20, write an equation in slope-intercept form of the line satisfying the given conditions.**

13. Has y-intercept -8 and slope 3

(0, -8)

$y = 3x - 8$

14. Has slope $\frac{5}{2}$ and passes through (4, -1)

$-1 = \frac{5}{2}(4) + b$

$-1 = 10 + b$

$-11 = b$

$y = \frac{5}{2}x - 11$

15. Passes through (-3, 7) and (2, 4) $\frac{4-7}{2-(-3)} = -\frac{3}{5}$

$7 = -\frac{3}{5}(-3) + b$

$7 = \frac{9}{5} + b$

$5\frac{2}{5} = b$

$y = -\frac{3}{5}x + 5.2$

16. Is horizontal and passes through (-4, 6)

$y = 6$

17. Is parallel to the y-axis and has an x-intercept of 3

$x = 3$

18. Is perpendicular to $4y = 3x - 8$ and passes through (-12, 7)

$\frac{4y}{4} = \frac{3x}{4} - \frac{8}{4}$

$y = \frac{3}{4}x - 2$ → $m = -\frac{4}{3}$

$7 = -\frac{4}{3}(-12) + b$

$7 = 16 + b$

$-9 = b$

$y = -\frac{4}{3}x - 9$

19. Is parallel to $3x - 5y = 7$ and passes through (0, -6)

$\frac{-5y}{-5} = \frac{-3x}{-5} + \frac{7}{-5}$

$y = \frac{3}{5}x - \frac{7}{5}$ → $m = \frac{3}{5}$

$y = \frac{3}{5}x - 6$

20. Is perpendicular to the y-axis and passes through (-2, 5)

$x = 5$

21. A rental Company charges $52.99 per day, including 200 free kilometers. There is a charge of $0.12/km for additional kilometers. Write a linear equation that models this situation.

$y = 52.99 + .12(x - 200)$

22. Write the slope intercept form of $y + 3 = -0.5(x - 10)$

$y + 3 = -\frac{1}{2}x + 5$

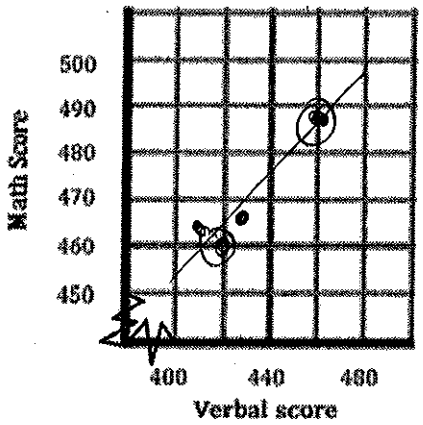
$-3 \quad\quad -3$

$y = -\frac{1}{2}x + 2$

**For questions 23 - 27, use the data in the table.**

23. Make a scatter plot relating the verbal scores and the math scores.

| State Graduation Scores | | |
|---|---|---|
| **Year** | **Verbal Score** | **Math Score** |
| 1970 | 460 | 488 |
| 1980 | 424 | 466 |
| 1990 | 410 | 463 |
| 2000 | 420 | 460 |




24. Does the scatter plot in question 21 show a *positive*, a *negative*, or *no correlation?* What does that relationship represent?

Positive correlation; As verbal scores increased, so did math scores.

25. Write the equation for a line of best fit.

(460, 488) (420, 400)

$\frac{460 - 488}{420 - 460} = \frac{-28}{-40} = .7$

$488 = .7(460) + b$

$488 = 322 + b$

$166 = b$

$y = .7x + 166$

26. Use the equation in #23 to predict the corresponding math score for a verbal score of 445. (x)

$y = .7(445) + 166$

$y = 311.5 + 166$

$y = 477.5$