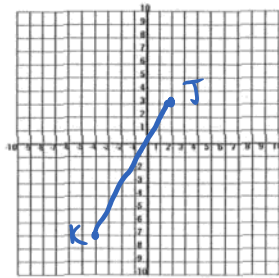# Part I: Slope & Intercepts practice test

LINEAR CHARACTERISTICS PRACTICE TEST

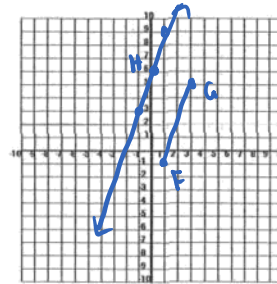NAME____**KEY**_____

1. Plot the line segment with the following endpoints:
   $J(2,3), K(-4,-7)$


5. Plot the line segment FG with endpoints at $F(1,-1)$ and ~~a midpoint~~ at $G(3,5)$.

2. What is the slope of the line segment above?

$$m = \frac{-7-3}{-4-2} = \frac{-10}{-6} = \frac{5}{3}$$

3. What are the coordinates of two other points on the line?

$$(5,8) \quad \& \quad (-1,-2)$$

4. What is the slope of a line perpendicular to JK?

$$-\frac{3}{5}$$

6. What is the slope of the line segment above?

$$m = \frac{5-(-1)}{3-1} = \frac{6}{2} = 3$$

7. What is the slope of a line parallel to FG.

$$m = 3$$

8. Plot a parallel line through $H(0,6)$

9. The peaked roof on a hut has a pitch of 3/5. If the roof has a total span of 12m, how tall is the roof?

12m
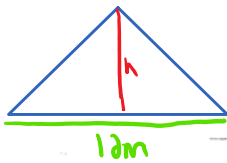
$$\frac{3}{5} \times \frac{h}{6} \Rightarrow \frac{18}{5} = \frac{5h}{5} \Rightarrow h = \frac{18}{5}m$$

10. Find the x-intercept and y-intercept of a line that has the equation $2x + 3y = 18$.

$$\frac{2x}{2} = \frac{18}{2} \qquad \frac{3y}{3} = \frac{18}{3}$$
$$x = 9 \qquad\qquad y = 6$$

11. A line has a slope of $\frac{-3}{5}$ and an x-intercept at $(-10,0)$. Find the y-intercept. $(0,y)$

$$\frac{-3}{5} = \frac{y-0}{0-(-10)}$$
$$\frac{-3}{5} \times \frac{y}{10}$$
$$\frac{-30}{5} = \frac{5y}{5} \Rightarrow y = -6$$

12. A line has a slope of $\frac{5}{2}$ and an y-intercept at $(0,-10)$. Find the x-intercept. $(x,0)$

$$\frac{5}{2} = \frac{0-(-10)}{x-0}$$
$$\frac{5}{2} \times \frac{10}{x}$$
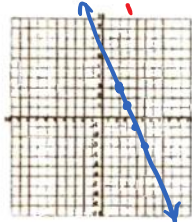$$\frac{5x}{5} = \frac{20}{5}$$
$$x = 4$$

13. Find the slope of a line segment that is parallel to GH if $G(4, -3)$ and $H(3, -7)$.

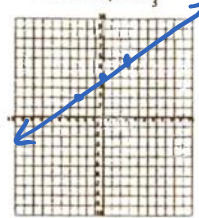$$m = \frac{-7 - (-3)}{3 - 4} = \frac{-4}{-1} = 4$$

14. Find the slope of a line segment that is perpendicular to KL if $K(-1, -8)$ and $L(0,0)$.

$$m = \frac{0 - (-8)}{0 - (-1)} = \frac{8}{1} = 8 \qquad m = -\frac{1}{8}$$

15. Plot the line through the point $(2,3)$ with a slope of -2.

16. Plot the line through the point $(-3,2)$ with a slope of $\frac{2}{3}$.

17. Find the value of k so that the following slopes are perpendicular.

$-\frac{3}{5}$ and $\frac{7}{k}$

$$-\frac{3}{5} \times \frac{-k}{7}$$

$$-\frac{k}{7} \qquad \frac{-21}{-5} = \frac{-5k}{-5}$$

$$k = \frac{21}{5}$$

18. Find the value of k so that the following slopes are perpendicular.

$\frac{12}{5}$ and $\frac{2k}{3}$

$$\frac{12}{5} \times \frac{-3}{2k}$$

$$\frac{-3}{2k} \qquad \frac{24k}{24} = \frac{-15}{24}$$

$$k = \frac{-15}{24}$$

19. **Challenge yourself:**
The centre of a circle is at $C(-12, -25)$ and a point is on the circumference at $(-3, -5)$. Find the length of the circumference to the nearest hundredth.

$C = 2\pi r$

$-3 - (-12)$
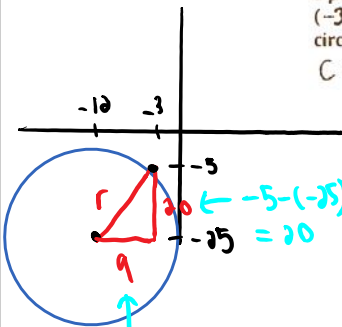$= 9$

① Find r

$$r^2 = 9^2 + 20^2$$
$$r^2 = 81 + 400$$
$$\sqrt{r^2} = \sqrt{481}$$
$$r = 21.9317 \text{ units}$$
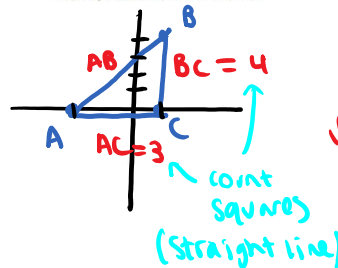
$\leftarrow -5 - (-25)$
$= 20$

② $C = 2\pi r$
$= 2\pi (21.9317)$
$= 137.80 \text{ units}$

20. **Challenge yourself:**
Calculate the perimeter of a triangle with vertices at $A(-2,0)$, $B(1,4)$ and $C(1,0)$ to the nearest tenth.

count squares (straight line)
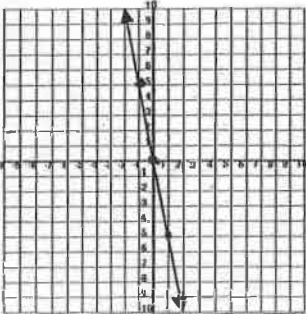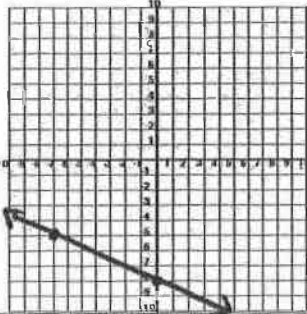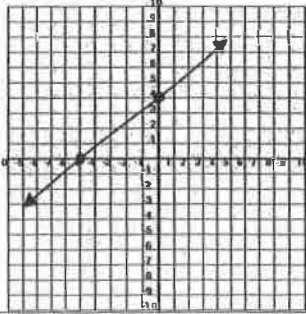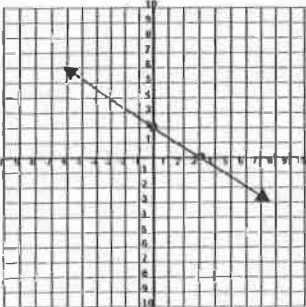
$$AB^2 = 4^2 + 3^2$$
$$AB^2 = 16 + 9$$
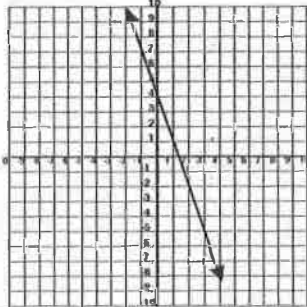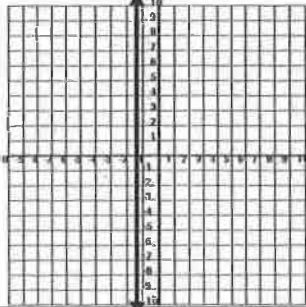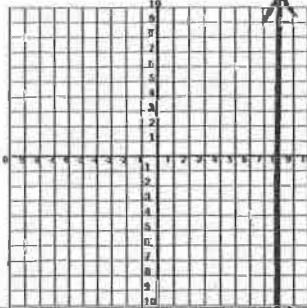$$\sqrt{AB^2} = \sqrt{25}$$
$$AB = 5$$

$\Rightarrow$ Perimeter $= 3 + 4 + 5$
$= 12 \text{ units}$

part II: linear Relations practice test

1.	2.	3.
4.	**5. (estimate)**	**6.**
7.	**8.**	**9.** $x: -5, or\ (-5,0)$ $y: 2, or\ (0,2)$
10. $x: 3, or\ (3,0)$ $y: \frac{12}{7}, or\ (0, \frac{12}{7})$	11. $x: 15, or\ (15,0)$ $y: -5, or\ (0,-5)$	12. x: does not exist $y: -5, or\ (0,-5)$
13. $2x - y - 5 = 0$	14. $y = -5x + 15$	15. $x - 7y + 23 = 0$
16. -58	17. $4x + 3y - 9 = 0$	18. $2x + y - 16 = 0$
19. $x - 7 = 0$	20. $y = -2x + 12$	21. $(0,0)$
22. $k = \frac{15}{2}$	23. $\left(-\frac{7}{2}, \frac{21}{2}\right)$	24. $k = \frac{5}{6}$