Name:

## Final Exam Practice Pack - Section 7

## SLOPE-INTERCEPT FORM: $\quad \boldsymbol{y}=\boldsymbol{m} \boldsymbol{x}+\boldsymbol{b}$

> The variables in this equation are very important

- The $\boldsymbol{m}$ : Is the SLOPE of the line, represented $\frac{R I S E}{R U N}$
- $\frac{\text { RISE }}{\text { RUN }}$ also $\frac{\text { CHANGE IN HEIGHT }}{\text { CHANGE IN LENGTH }}$
- The Slope is the same from any point on the line to another
- The SLOPE stays constant
- The $\boldsymbol{b}$ : Is the $\boldsymbol{y}$-intercept, where the line crosses the $y$-axis
- Why $b$ and not $y$ then?
- You will soon find out...
- Lastly, the $x$ and $y$.
- They represent the $(\boldsymbol{x}, \boldsymbol{y})$ coordinates of every possible point on the line

So, why $b$ for the $y$-int?
> Have a look at the grid
$>$ No matter where you cross the $y$-axis, what is the $x$-value?
$>\mathrm{It}$ is always, 0
> So every $y$ - intercept, has the coordinates: $(0, b)$


The $\boldsymbol{b}$, is wherever it crosses the $\boldsymbol{y}$-axis.

## STANDARD FORM: $\quad \boldsymbol{A x}+\boldsymbol{B y}=\boldsymbol{C}$

## Example:

Let's graph this:

$$
x+y=4
$$

- Set yourself up a Table of Values
- It reads, when $x$ is ... $y$ is ...
i) When $x$ is 0

| $x$ | $y$ |
| :---: | :---: |
| 0 | $\mathbf{4}$ |
| $\mathbf{4}$ | 0 |
| -4 | $\mathbf{8}$ |

$$
\begin{aligned}
& 0+y=4 \\
& \boldsymbol{y}=\boldsymbol{4}
\end{aligned}
$$

- For the third point you can pick anything
- I highly suggest you take the value that you got when you solved for $\boldsymbol{x}$, and flip the sign
iii) When $\boldsymbol{x} \boldsymbol{i s} \boldsymbol{- 4}$
$-4+y=4$
$y=4+4$
$\boldsymbol{y}=8$
- If it was positive use the negative of it, and vice versa
- In this case we will take -4


| $x$ | $y$ |
| :---: | :---: |
| 0 | $\mathbf{4}$ |
| $\mathbf{4}$ | 0 |
| $-\mathbf{4}$ | $\mathbf{8}$ |

- So with the completed table of values we can graph it now
- We have three points:

$$
(0,4),(4,0), \text { and }(-4,8)
$$

1. Map the following Coordinate ( $x, y$ ) on the 2-D plane (GRID)

| $A(-1,3)$ | $B(9,1)$ |
| :--- | :---: |
| $C(-4,-4)$ | $D(7,-7)$ |
| $E(5,3)$ | $F(-1,8)$ |
| $G(-8,-2)$ | $H(0,2)$ |


2. Identify the Coordinates of the given points

3. What does it mean to be a solution to an equation with respect to coordinates of a point?
4. What is the $y$-intercept? What is the $\mathbf{x}$-coordinate of every $y$-intercept point? Example?
5. What is the $x$ - intercept? What is the $y$-coordinate of every $x$-intercept point? Example?
6. For the sake of our Math Vocabulary then:

$$
S L O P E=\square
$$

7. Are the following points solutions to the given equations? Are they POINTS on the given LINE?
A) $(1,-6) \quad y=-2 x+4$
B) $(0,-5) \quad y=\frac{2}{3} x-5$
C) $(-2,1) \quad y=-\frac{3}{2} x+4$
D) $(8,-2) \quad y=-\frac{1}{8} x+1$
E)
8. What is the SLOPE and Y-INTERCEPT of the following lines?


9. Graph the following lines.
a) $y=2 x-7$

b) $\quad y=-\frac{3}{7} x+9$

c) $y=-x+6$

e) $y=-5$

d) $y=-\frac{1}{7} x-2$

f) $x=-5$

10. Are the following points solutions to the given equations? Are they POINTS on the given LINE?
a) $(-2,4)$
$2 x+3 y=8$
b) $(-6,1)$
$\frac{1}{6} x+13 y=14$
c) $(8,-2)$
$2 x-y=12$
d) $(-3,-4)$
$-4 x-2 y=4$
11. Graph the following equations, use the table of values to organize your coordinates.
i)

$$
x-3 y=-6
$$



| $x$ | $y$ |
| :--- | :--- |
|  |  |
|  |  |
|  |  |
|  |  |

ii) $4 x+5 y=20$


iii) $\quad \frac{2}{3} x-2 y=-2$


| $x$ | $y$ |
| :---: | :---: |
|  |  |
|  |  |
|  |  |
|  |  |

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


12. Using your algebraic logic, manipulate the STANDARD FORM equations in to SLOPEINTERCEPT equations and graph them.
a) $2 x+3 y=-9$

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

c) $-12 x+5 y=-10$

d) $\frac{1}{6} x+\frac{2}{3} y=-2$

13. Using your algebraic logic, manipulate the SLOPE-INTERCEPT to STANDARD FORM, remember that $A x+B y=C$ has NO FRACTIONS and $A>0$
a) $y=-\frac{2}{5} x-6$
b) $y=-3 x+5$
c) $y=-5 x-\frac{4}{3}$
d) $7-3 x=y$
16. Which graph represents $y=2 x+6 \quad$ How do you know?

17. Which graph represents $2 x+y=8$ How do you know?

18. Which graph represents
$y=-\frac{3}{4} x-4$
How do you know?

19. Which graph represents
$3 x+2 y=12$
How do you know?

20. Which equation matches the graph below:

$$
\begin{aligned}
& y=3 x+2 \\
& y=-3 x+2 \\
& y=3 x-2
\end{aligned}
$$


21. Which equation matches the graph below:

$$
\begin{aligned}
& 2 x+3 y=6 \\
& -2 x-3 y=6 \\
& 2 x-3 y=-6
\end{aligned}
$$


22. Write the equation of the following graph in SLOPE-INTERCEPT form, then manipulate it to STANDARD FORM


