Study Guide (Part B) Key

Topic 2: Linear Equations: Slope-Intercept & Standard Form

Write each equation in STANDARD FORM.

11. $\left[y = -\frac{2}{3}x + 3\right] 3$

$3y = -2x + 9$

$\boxed{2x + 3y = 9}$

12. $\left[\frac{5}{8}x + \frac{3}{4}y = -1\right] \cdot 8$

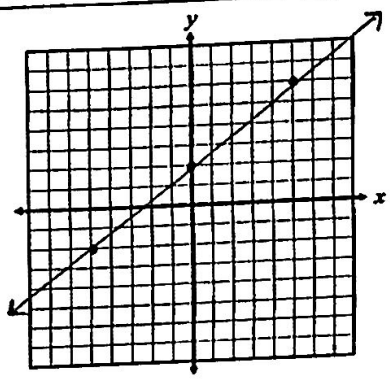
$\boxed{5x + 6y = -8}$

Write each equation in SLOPE-INTERCEPT FORM, then graph the line.

13 $4x - 5y = -10$

$-5y = -4x - 10$

$y = \frac{4}{5}x + 2$

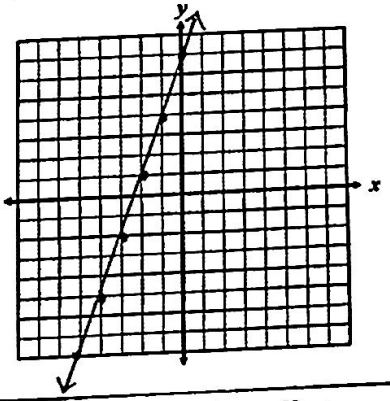


14. $12x = 4y - 28$

$12x + 28 = 4y$

$3x + 7 = y$

$y = 3x + 7$



Give an example of a line that is parallel and a line that is perpendicular to each given line.

15. $9x + 6y = -6$

$6y = -9x - 6$

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

Parallel: $y = \frac{-3}{2}x + 4$

Perpendicular: $y = \frac{2}{3}x + 2$

16. $y = -5$

Parallel: $y = 7$

Perpendicular: $x = 0$

Find the x- and y-interepts of each line, then graph the line.

17. $y = -5x - 3$

x-int:

$0 = -5x - 3$

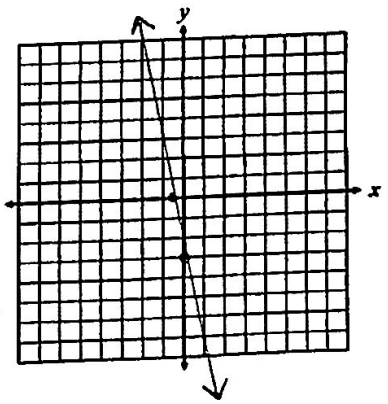
$3 = -5x$

$-\frac{3}{5} = x \quad \left(-\frac{3}{5}, 0\right)$

y-int:

$y = -5(0) - 3$

$y = -3 \quad (0, -3)$



18. $4y = 10x - 24$

x-int:

$4(0) = 10x - 24$

$24 = 10x$

$\frac{12}{5} = x$

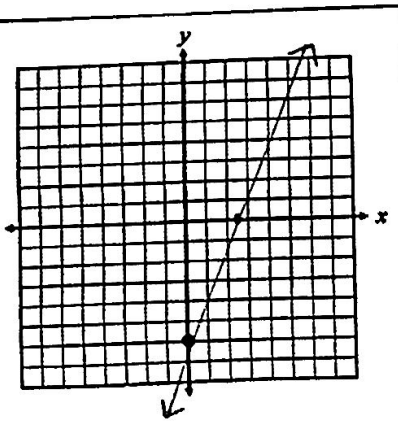
$\left(\frac{12}{5}, 0\right)$

y-int:

$4y = 10(0) - 24$

$4y = -24$

$y = -6$



Topic 3: Writing Linear Equations & Applications

Write the equation in SLOPE-INTERCEPT FORM with the given information.

19. Passes through (-8, 3) with a slope of -2

$y - 3 = -2(x - -8)$

$y - 3 = -2x - 16$

$\boxed{y = -2x - 13}$

20. Passes through (-7, -3) and (5, 6)

$\frac{6 - -3}{5 - -7} = \frac{9}{12} = \frac{3}{4}$

$y - 6 = \frac{3}{4}(x - 5)$

$y - 6 = \frac{3}{4}x - \frac{15}{4}$

$\boxed{y = \frac{3}{4}x + \frac{9}{4}}$

DEFINE VARIABLES and WRITE EQUATIONS to represent the following situations, then solve.

21. For comission as a realtor, Michelle earns $349 plus 3% of the purchase price for each home she helps buy or sell. If she earned $8,965 in commission on a certain home, find its purchase price.

p = purchase price

C = commission

$C = 349 + .03p$

$8965 = 349 + .03p$

$8616 = .03p$

$287,200 = p$

The purchase price was $287,200.

22. On Ryan's last social studies test, there were two types of questions: true/false worth 2 points each and multiple choice questions worth 4 points each. If Ryan earned 86 points on the test and answered 18 multiple choice questions correctly, how many true/false questions did he answer correctly?

x = true/false

y = mult. choice

S = score

$S = 2x + 4y$

$86 = 2x + 4(18)$

$86 = 2x + 72$

$14 = 2x$

$7 = x$

Ryan answered 7 true/false questions correctly.

23. The table below shows the altitude of a plane once it begins its descent to a runway.

Time (minutes)	*Altitude (feet)*
0	28,500
1	26,378
2	24,105
3	21,774
4	19,452
5	17,991

a) Write an equation to model the data using linear regression.

$y = -2161.54x + 28437.19$

b) Find the height of the plane after 8 minutes. $x = 8$

$y = -2161.54(8) + 28437.19$

$\boxed{y = 11,144.87 \text{ feet}}$

c) How long will it take the plane to land? $y = 0$

$0 = -2161.54x + 28437.19$

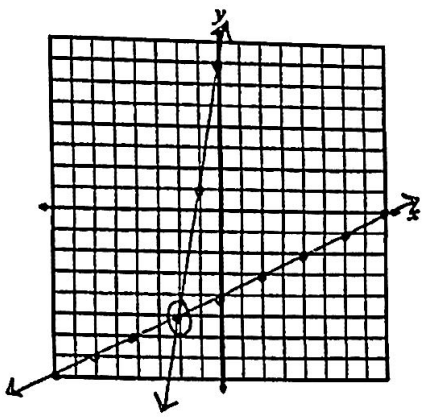
$-28437.19 = -2161.54x$

$13.15 = x$

About 13 minutes

Topic 4: Systems of Equations

24. $x-2y=8$
$6x-y=-7$ (Solve by Graphing)

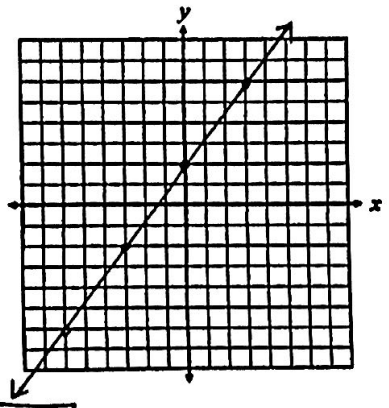


$-2y=-x+8$
$y=\frac{1}{2}x-4$

$-y=-6x-7$
$y=6x+7$

$(-2,-5)$

25. $3y-6=4x$
$16x+24=12y$ (Solve by Graphing)



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

$16x+24=12y$

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

Infinite Solutions

26. $5x-4y=9$
$x+7y=-6 \rightarrow x=-7y-6$ (Solve by Substitution)

$5(-7y-6)-4y=9$
$-35y-30-4y=9$
$-39y=39$
$y=-1$

$x+7(-1)=-6$
$x-7=-6$
$x=1$

$(1,-1)$

27. $2x+3y=-35$
$8x-y=-23 \rightarrow y=8x+23$ (Solve by Substitution)

$2x+3(8x+23)=-35$
$26x+69=-35$
$26x=-104$
$x=-4$

$8(-4)-y=-23$
$-32-y=-23$
$-y=9$
$y=-9$

$(-4,-9)$

28. $3x+10=14y$
$8x-7y=34$ (Solve by Elimination)

$3x-14y=-10$
$(8x-7y=34)-2$

$3x-14y=-10$
$-16x+14y=-68$

$-13x=-78$
$x=6$

$3(6)+10=14y$
$28=14y$
$2=y$

$(6,2)$

29. $18x=12y+7$
$-8y+21=-12x$ (Solve by Elimination)

$(18x-12y=7)2$
$(12x-8y=-21)-3$

$36x-24y=14$
$-36x+24y=63$

$0 \neq 77$

No solution!

30. Ben has a collection of quarters and nickels worth \$5.35. If the number of nickels is five less than twice the number of quarters, find the number of each coin.

x = quarters
y = nickels

$.25x+.05y=5.35$
$y=2x-5$

Ben had 16 quarters and 27 nickels.

$.25x+.05(2x-5)=5.35$
$.25x+.10x-.25=5.35$
$.35x=5.60$
$x=16$

$y=2(16)-5$
$y=32-5$
$y=27$

31. Aliyah bought four composition notebooks and three packs of pencils from the school bookstore and paid $10.93. Laura bought seven composition notebooks and two packs of pencils and paid $13.31. If each pencil pack contains ten pencils, what is the unit price per pencil?

X= comp. notebooks

y= pencils

$-2(4x + 3y = 10.93)$

$3(7x + 2y = 13.31)$

$-8x - 6y = -21.86$

$+ 21x + 6y = 39.93$

$13x = 18.07$

$x = 1.39$

$4(1.39) + 3y = 10.93$

$3y = 5.37$

$y = 1.79$

Each pencil cost $0.179.

(4x + 7y - 5z = 47)