1) Find the solution of the following linear systems by GRAPHING. Remember that you will need to determine the slope and y-intercept of each line first.

a) $y=x-4$ b) $y=-3x+10$

 slope = y-int = slope = y-int =

 $y=\frac{1}{2}x+1$ $y=x-10$

 slope = y-int = slope = y-int =

Solution: Solution:

2) Find the solution to the linear system in 1b) using ALGEBRA.

|  |
| --- |
|  $y=-3x+10$ ➀$ y=x-10$ ➁ |
| 1) Set the equations equal, and solve for “x” | 2) Sub your value for “x” into either equation |
|  |  |
| Point of Intersection = ( , ) |

3) Solve the following linear systems using elimination. In these two questions, you will just need to decide whether to add or subtract.

|  |  |
| --- | --- |
| a) Linear System: $4x+y=6$ ➀$2x+y=4$ ➁ | Add (opposites) or Subtract (same sign)? |
| Do the Addition/Subtraction: | Sub into equation ➀ or ➁ |
| Solution: ( , ) |

|  |  |
| --- | --- |
| b) Linear System: $5x+3y=27$ ➀$5x+y=19$ ➁ | Add (opposites) or Subtract (same sign)? |
| Do the Addition/Subtraction: | Sub into equation ➀ or ➁ |
| Solution: ( , ) |

4) Solve the following linear systems using elimination. In these questions, you will need to decide how to multiply one or both equations.

|  |  |  |  |
| --- | --- | --- | --- |
| a) Linear System: $3x+y=21$ ➀$2x+3y=28$ ➁ | Match “x’s” | Match “y’s” | New Linear System:  |
| Multiply… |
| Do the Addition/Subtraction: | Sub into equation ➀ or ➁ |
| Solution: ( , ) |

|  |  |  |  |
| --- | --- | --- | --- |
| b) Linear System: $3x+6y=69$ ➀$2x+5y=54$ ➁ | Match “x’s” | Match “y’s” | New Linear System:  |
| Multiply… |
| Do the Addition/Subtraction: | Sub into equation ➀ or ➁ |
| Solution: ( , ) |
| c) Linear System: $x+2y=28$ ➀$4x+3y=67$ ➁ | Match “x’s” | Match “y’s” | New Linear System:  |
| Multiply… |
| Do the Addition/Subtraction: | Sub into equation ➀ or ➁ |
| Solution: ( , ) |

|  |  |  |  |
| --- | --- | --- | --- |
| d) Linear System: $3x+4y=80$ ➀$4x+3y=81$ ➁ | Match “x’s” | Match “y’s” | New Linear System:  |
| Multiply… |
| Do the Addition/Subtraction: | Sub into equation ➀ or ➁ |
| Solution: ( , ) |

5) Mr. Smith is doing some farming in clash of clans (specifically, he is “barching”). He trains a total of 220 troops (archers and barbarians). His Barbarians cost 200 elixir to train, and Archers cost 400 elixir to train. Mr. Smith spent 68,000 elixir training an army.

This leads to the linear system given below. Solve the linear system to find out how much of each troop he trained!

|  |  |  |
| --- | --- | --- |
| Linear System: $a+b=220$ ➀$400a+200b=68,000$ ➁ | Multiply… | New Linear System:  |
| Do the Addition/Subtraction: | Sub into equation ➀ or ➁ |
| # of archers = | # of barbarians =  |

6) This time he is training balloons and dragons. Balloons take up 5 troops spaces, and dragons take up 20. Balloons cost 4,500 elixir to train, and dragons cost 37,000 elixir to train. Mr. Smith spends 350,000 elixir training this army.

This leads to the linear system given below. Solve the linear system to find out how much of each troop he trained! [5 marks]

|  |  |  |
| --- | --- | --- |
| Linear System: $5b+20d=220$ ➀$4,500b+37,000d=350,000$ ➁ | Multiply… | New Linear System:  |
| Do the Addition/Subtraction: | Sub into equation ➀ or ➁ |
| # of balloons = | # of dragons =  |

Answers:

1.a) (10, 6) b) (5, -5) 3. a) (1, 2) b) (3, 4) 4.a) (5, 6) b) (7, 8)

4.c) (10, 9) d) (12, 11) 5. 120 archers and 100 barbarians

6. 12 balloons and 8 dragons