

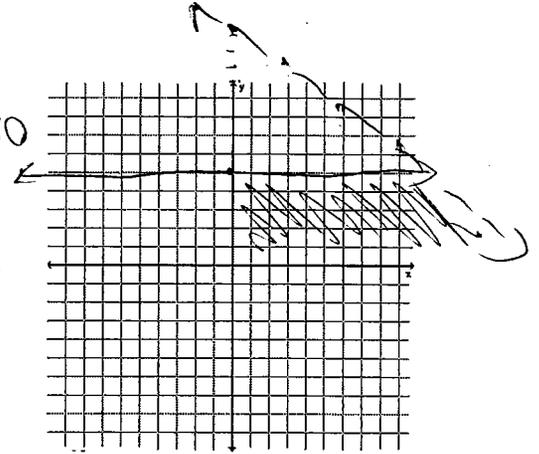
1. Write and graph a system of inequalities for the given situation. Shade the correct portion that would represent the solutions.

"Naveen was going to the store to buy some fruit. Naveen is a big fan of oranges and would like to purchase 5 apples or less. If apples cost \$0.75 each and oranges cost \$0.50 each, what combinations of the fruit can be bought for under \$10?" (Hint: Use x for oranges and y for apples)

$$.50x + .75y < 10 \rightarrow .75y = -.5x + 10$$

$$y \leq 5$$

$$y = -\frac{2}{3}x + 13.33$$



2. Use the following information to create a two-way table, then use the table to answer the questions.

"Syd was tracking information about her fellow classmates. She was wondering if there is an association between kids who play sports and kids who receive a passing grade in math class. She found out that out of the 116 kids she surveyed, that 92 of the kids play sports, 13 of the kids are not passing their math class, and that there are 4 kids who don't play a sport and are not passing math."

- a. What is the probability that a randomly selected student is passing their math class?  
 $\frac{103}{116} = 88.8\%$

<del>X</del>	sports	no sport	Total
passing	83	20	103
not pass	9	4	13
Total	92	24	116

- b. If a randomly selected kid plays a sport, what is the probability that they are not passing their math class?

$$\frac{9}{92} = 9.8\%$$

- c. What is the probability that a randomly selected kid plays a sport or passes math class?

$$\frac{83 + 20 + 9}{116} = 96.5\%$$

- d. Syd wants to find out if there is an association between playing sports and passing math class, that is, are kids who play sports more likely to pass their math class, then those kids who don't play sports? Find the two probabilities and decide if there is an association between these two events.

$$\frac{83}{92} = 90.2\% \quad \frac{20}{24} = 83.3\%$$

Kids who play sports are more likely to pass math.

3. Using the system of inequalities, find which region contains the solution(s) and shade it.

$$y \leq 5(1.2)^x$$

$$y \geq 2(0.8)^x$$

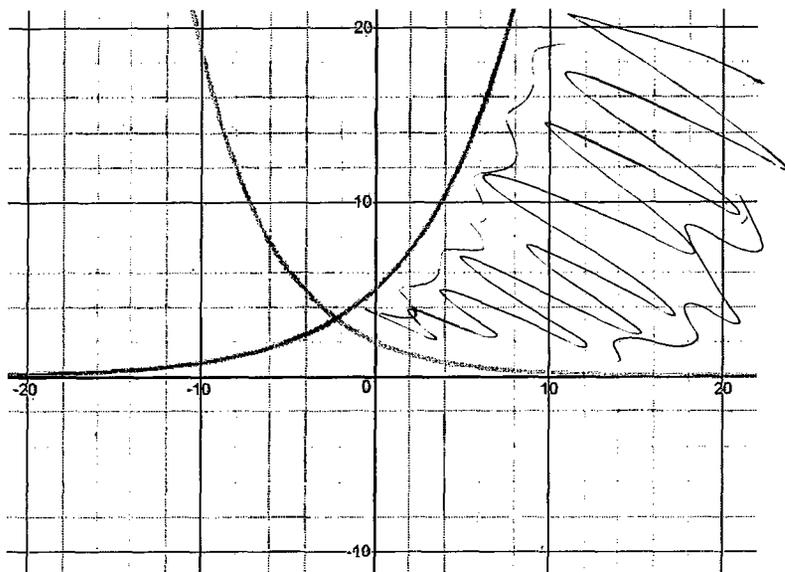
4 regions to check

$$(0, 0) \quad \times$$

$$(0, 10) \quad \times$$

$$(10, 10) \quad \checkmark$$

$$(-10, 10) \quad \times$$



4. Solve the following problems. For parts c and d, graph the solutions on a number line.

a.  $|\frac{1}{2}x - 5| = 12$

$$\frac{1}{2}x - 5 = 12$$

$$\frac{1}{2}x - 5 = -12$$

$$\frac{1}{2}x = 17$$

$$\frac{1}{2}x = -7$$

$$x = 34$$

$$x = -14$$

c.  $3(2x - 5) + 8 < -4x + 23$

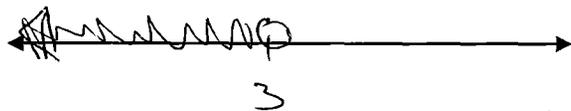
$$6x - 15 + 8 < -4x + 23$$

$$6x - 7 < -4x + 23$$

$$10x < 30$$

$$x < 3$$

check  $0 \rightarrow -7 < 23 \checkmark$



b.  $\frac{x}{6} + 1 = \frac{2x}{7} - 3$

$$x + 6 = \frac{12x}{7} - 18$$

$$7x + 42 = 12x - 126$$

$$168 = 5x$$

$$33.6 = x$$

d.  $|2x - 4| \geq 18$

$$(2x - 4) = 18$$

$$2x - 4 = 18$$

$$2x = 22$$

$$x = 11$$

$$2x - 4 = -18$$

$$2x = -14$$

$$x = -7$$

3 regions to check



5. Write an exponential equation that goes through the points  $(-1, 17.77)$  and  $(2, 12.96)$ . Then use the equation to find the value of  $y$  when  $x = 5$ . (round all decimals to nearest hundredth).

$$y = ab^x$$

$$y = 16(.9)^x$$

$$y = 16(.9)^5 \approx 9.45$$

6. Your parents are looking into starting a college savings fund for you. They give you two different "savings" options to choose from.

Option #1: We will place \$500 into the account today and add \$100 each month.

Option #2: We will place \$50 into the account today and we will exponentially add 10% each month.

If you are currently 12 years old, and plan on going to college in exactly 6 years, which option would you choose to have the most money? Write equations for each option and find out which option is worth more.

Q1:  $y = 100x + 500$

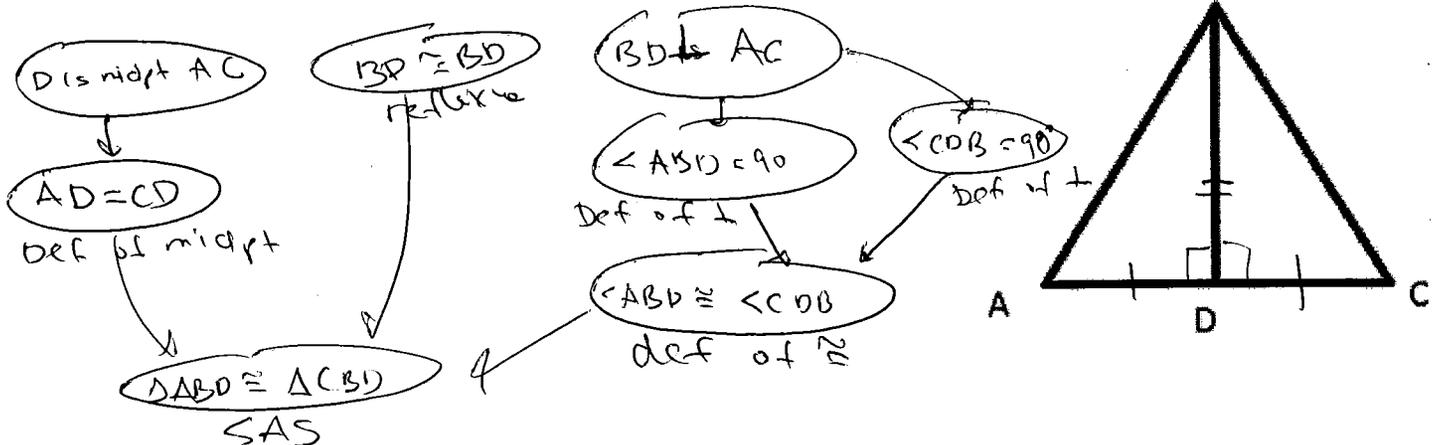
6 yrs  $\rightarrow$  \$7,700

Q2:  $y = 50(1.10)^x$

6 yrs  $\rightarrow$  \$47,779.69

7. Construct a flowproof to prove that  $\triangle ABD \cong \triangle CBD$ .

Given: D is the midpoint of AC  
BD is perpendicular to AC.



8. Keith has \$500 in a savings account at the beginning of the summer. He wants to have at least half of his savings left in his account by the end of the summer. He withdraws \$25 each week for food, clothes, and movie tickets. Write and solve an inequality to determine how many weeks Keith can withdraw money for.

less than or equal to 10 weeks

$$500 - 25w \geq 250 \rightarrow 500 - 25w \geq 250$$

$$-25w \geq -250$$

$$w = 10$$

