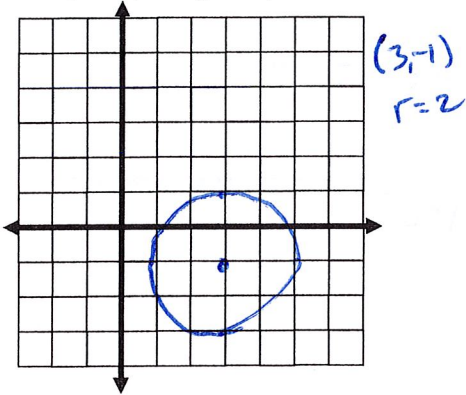


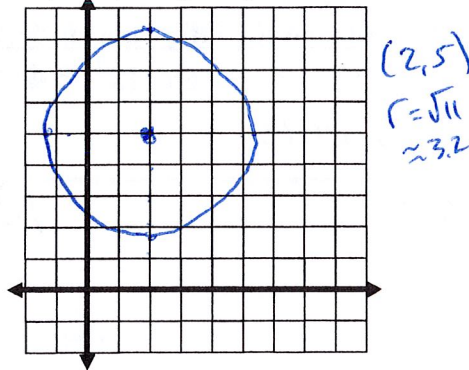
Note: If r^2 is not a perfect square then leave r in simplified radical form but use the decimal equivalent for graphing. Example: $\sqrt{12} = 2\sqrt{3} = 3.46$

1) Graph the following circle:

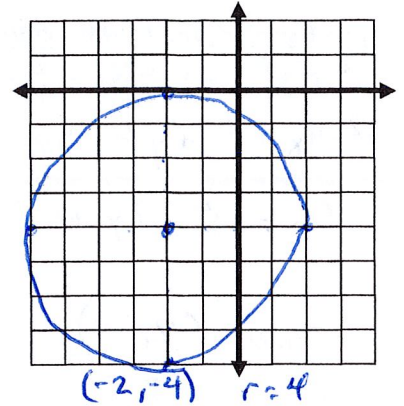
a. $(x - 3)^2 + (y + 1)^2 = 4$



b. $(x - 2)^2 + (y - 5)^2 = 11$



c. $(y + 4)^2 + (x + 2)^2 = 16$



2) For each circle: Identify its center and radius.

a. $(x + 3)^2 + (y - 1)^2 = 4$

Center: $(-3, 1)$

Radius: 2

b. $x^2 + (y - 3)^2 = 18$

Center: $(0, 3)$

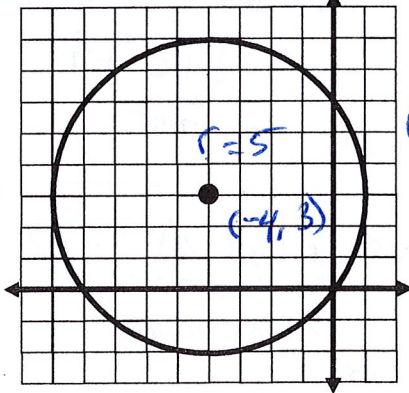
Radius: $\sqrt{18} = 3\sqrt{2} \approx 4.2$

c. $(y + 8)^2 + (x + 2)^2 = 72$

Center: $(-2, -8)$

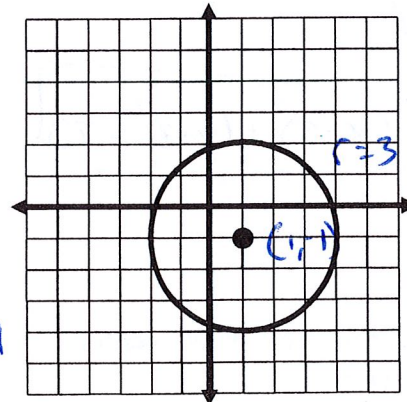
Radius: $\sqrt{72} = 6\sqrt{2} \approx 8.5$

3) Write the equation of the following circles:

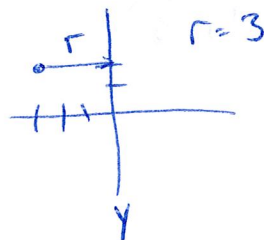


$(x + 4)^2 + (y - 3)^2 = 25$

$(x - 1)^2 + (y + 1)^2 = 9$



4) Give the equation of the circle that is tangent to the y-axis and center is $(-3, 2)$.



$(x + 3)^2 + (y - 2)^2 = 9$

Putting Equations in Standard Form

Example 1: $x^2 + y^2 + 6x - 8y - 11 = 0$

Example 2: $x^2 + y^2 - 2x + 6y - 10 = 0$

$(x^2 + 6x) + (y^2 - 8y) = 11$

$(x^2 + 6x + 9) + (y^2 - 8y + 16) = 11 + 9 + 16$

$(x + 3)^2 + (y - 4)^2 = 36$

Center: (-3, 4) Radius: 6

Center: _____ Radius: _____

6) Find the standard form, center, and radius of the following circles:

6a) $x^2 + y^2 - 4x + 8y - 5 = 0$

6b) $4x^2 + 4y^2 + 36y + 5 = 0$

$x^2 - 4x + 4 + y^2 + 8y + 16 = 5 + 4 + 16$

$(x - 2)^2 + (y + 4)^2 = 25$

NOPE

Center: (2, -4)

Center: _____

Radius: r = 5

Radius: _____

8) Give the equation of the circle whose center is (5, -3) and goes through (2, 5)

$d = \sqrt{(3)^2 + (8)^2}$

$= \sqrt{9 + 64}$

$r = \sqrt{73}$

$(x - 5)^2 + (y + 3)^2 = 73$

9) Give the equation whose endpoints of a diameter at (-4, 1) and (4, -5)

midpt
 $(\frac{-4+4}{2}, \frac{1+(-5)}{2})$

$(0, -2)$
CTR

$d = \sqrt{(4)^2 + (3)^2}$

$= \sqrt{16 + 9}$

$= \sqrt{25}$

$(x^2) + (y + 2)^2 = 25$

10) Give the equation of the circle whose center is (4, -3) and goes through (1, 5)

$d = \sqrt{(3)^2 + (8)^2}$

$= \sqrt{9 + 64}$

$= \sqrt{73}$

$(x - 4)^2 + (y + 3)^2 = 73$

11) Give the equation whose endpoints of a diameter at (-3, 2) and (1, -5)

midpt
 $(\frac{-3+1}{2}, \frac{2+(-5)}{2})$

$(-1, -\frac{3}{2})$

$d = \sqrt{\dots}$

Name _____

Date: _____

1. In a bowl of marbles, there are 9 reds, 7 greens, and 10 blues.

$n = 26$

a. If a marble is chosen at random from the bowl, what is the probability of choosing a red one OR a blue one?

$$\frac{9}{26} + \frac{10}{26} = \frac{19}{26} \approx .731$$

b. If two marbles are chosen at random with replacement, what is the probability of picking a red marble AND then, a blue marble? *Put it back*

$$\frac{9}{26} \cdot \frac{10}{26} = \frac{90}{676} = \frac{15}{46} \approx .326$$

c. If two marbles are chosen at random without replacement, what is the probability that they are both red? *keep it out*

$$\frac{9}{26} \cdot \frac{8}{25} = \frac{72}{650} = \frac{36}{325} \approx .111$$

2. A person rolls two dice, one after the other. Find the probability of the following events.

a. P(sum of 5) = $\frac{4}{36} = \frac{1}{9}$

b. P(sum is a multiple of 3) = $\frac{12}{36} = \frac{1}{3}$

c. P(sum less than 5 or more than 8) = $\frac{16}{36} = \frac{4}{9}$

d. P(sum is even given that one die showed a 2) = $\frac{5}{11}$

	1	2	3	4	5	6
1	2	3	4	5	6	7
2	3	4	5	6	7	8
3	4	5	6	7	8	9
4	5	6	7	8	9	10
5	6	7	8	9	10	11
6	7	8	9	10	11	12

3. In a Coordinate Algebra class, 18 students were male and 13 students were female. Out of those students, 14 of the guys and 9 of the girls passed the EOC. Construct a contingency table with this information:

	Males	Females	
Passed	14	9	23
Did not Pass	4	4	8
	18	13	31

4. Find the following probabilities:

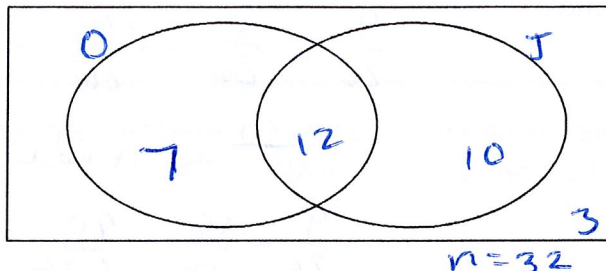
A. P(Girl who passed the EOC) *Girl AND Passing* = $\frac{9}{31}$

B. P(Boy or someone who didn't pass) $P(B) + P(P^c) - OL$
 $\frac{18}{31} + \frac{8}{31} - \frac{4}{31} = \frac{22}{31}$

5. In a class of 32 student, 22 are wearing blue jeans and 19 are wearing orange shirts. 3 are not wearing jeans or an orange shirt.

a. Draw a Venn diagram to represent this situation.

O = wearing orange shirt
J = wearing jeans



$$O + J - (O \cap J) = (O \cup J)$$

$$19 + 22 - x = 29$$

29 comes from
 $32 - 3$

Find the following:

b. $P(O) = \frac{19}{32} \approx .594$

c. $P(\sim J) = \frac{7+3}{32} = \frac{10}{32} = \frac{5}{16} \approx .313$

d. $P(O \cap J) = \frac{12}{32} = \frac{3}{8} \approx .375$

e. $P(O \cup J) = \frac{29}{32} \approx .906$

f. $P(O | J) = \frac{12}{22} = \frac{6}{11} \approx .545$

6. In a certain neighborhood, the probability of owning a bike is .736 and the probability of owning a skateboard is .385. The probability of owning a bike and a skateboard is .283. Are owning a bike and owning a skateboard independent?

$$(.736) \times (.385) \stackrel{?}{=} .283$$

$$.283 \stackrel{\checkmark}{=} .283 \text{ they are indep!}$$

6. Use the conditional probability formula to answer the following.

- The probability that a student is wearing a hoodie given that they're a boy is .211
- The probability that a student is a boy is .495.

A student is picked at random. What's the probability that a student is picked who is a boy and is wearing a hoody?

$$P(A|B) = \frac{P(A \cap B)}{P(B)} \quad \text{given} = \frac{\text{AND}}{\text{totally}}$$

$$.211 = \frac{x}{.495}$$

$$\boxed{.104 \approx x}$$

8. If V represents the set all license plates beginning with a vowel, and O represents the set of all license plates that end with an odd number, which license plate belongs to the set $V \cap O$?

vowel and not odd



9. Which of the following events are independent?

- a. $P(A) = 0.25$; $P(B) = 0.25$; $P(A \text{ and } B) = 0.5$ $\neq .0625$ *NOPE*
- b. $P(A) = 0.08$; $P(B) = 0.4$; $P(A \text{ and } B) = 0.12$ $\neq .032$ *NOPE*
- c. $P(A) = 0.16$; $P(B) = 0.24$; $P(A \text{ and } B) = 0.32$ $\neq .038$ *NOPE*
- d. $P(A) = 0.3$; $P(B) = 0.15$; $P(A \text{ and } B) = 0.045$ $= .045$ *yes indep.*

