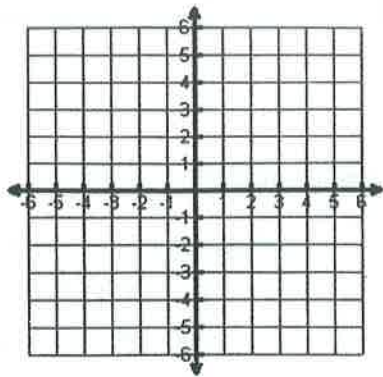


Graph the following circles. State the center and radius.

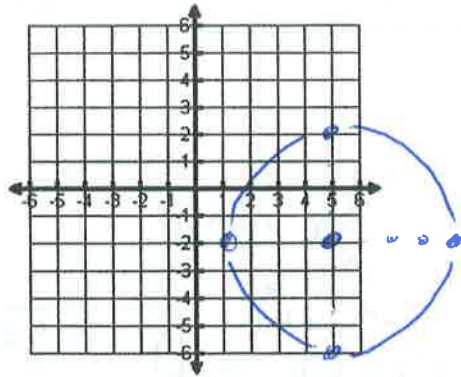
1) $x^2 + y^2 = 20$

Center: (0,0) & Radius: $\sqrt{20} = 2\sqrt{5}$



2) $(x-5)^2 + (y+2)^2 = 16$

Center: (5,-2) & Radius: 4



Write the standard equation for the circle. State the center and radius.

3) $x^2 + y^2 - 14x + 4y - 11 = 0$

$$x^2 - \frac{14}{2}x + \square + y^2 + \frac{4}{2}y + \square = 11 + \square + \square$$

$$(x-7)^2 + (y+2)^2 = 11 + 49 + 4$$

$$(x-7)^2 + (y+2)^2 = 64$$

C: (7, -2) r: 8

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

$$x^2 - \frac{8}{2}x + \square + y^2 + \frac{4}{2}y + \square = 6 + \square + \square$$

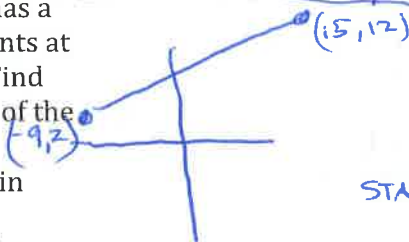
$$(x-4)^2 + (y+2)^2 = 6 + 16 + 4$$

$$(x-4)^2 + (y+2)^2 = 26$$

C: (4, -2) r: $\sqrt{26}$

5) A circular disk drive has a diameter with endpoints at (-9, 2) and (15, 12). Find the center and radius of the disk drive. Write the equation of the circle in standard form, then convert it to general form.

C: (3, 7)
r: 13



$$\text{radius} = d = \sqrt{(15-3)^2 + (12-7)^2}$$

$$= \sqrt{12^2 + 5^2}$$

$$= \sqrt{144 + 25} = \sqrt{169} = 13$$

STAN: $(x-3)^2 + (y-7)^2 = 169$

$x^2 + y^2 - 6x - 14y - 111 = 0$

Center \rightarrow (MIDPT) \rightarrow $(\frac{15+(-9)}{2}, \frac{12+2}{2}) \rightarrow (\frac{6}{2}, \frac{14}{2}) \rightarrow (3, 7)$

6) Find the point that partitions the line segment in a 1:1 ratio with endpoints (8, 4) and (-5, -7).

$$\Delta x: (-5-8) \Rightarrow -13$$

$$\Delta y: (-7-4) \Rightarrow -11$$

$$x: -13(\frac{1}{2}) = -\frac{13}{2} = -6.5$$

$$y: -11(\frac{1}{2}) = -\frac{11}{2} = -5.5$$

so, $(8, 4)$
 $+ (-6.5, -5.5)$

 $(-1.5, -1.5)$

7) Find the perimeter of the triangle with the vertices (-3, 2), (1, -5), and (5, 4).

$$d_1 = \sqrt{(-3+1)^2 + (2--5)^2} = \sqrt{(-4)^2 + (7)^2} = \sqrt{65}$$

$$d_2 = \sqrt{(1-5)^2 + (-5-4)^2} = \sqrt{(-4)^2 + (-9)^2} = \sqrt{97}$$

$$d_3 = \sqrt{(5--3)^2 + (4-2)^2} = \sqrt{8^2 + (2)^2} = \sqrt{68}$$

$$P = \sqrt{65} + \sqrt{97} + \sqrt{68} =$$

• Distribute squares •

Change the following equations to general form of a circle, making sure it's in the correct order.

8) $(x-4)^2 + (y-1)^2 = 9$

$x^2 - 8x + 16 + y^2 - 2y + 1 = 9$

$x^2 + y^2 - 8x - 2y + 8 = 0$

9) $(x-3)^2 + (y+8)^2 = 25$

$x^2 - 6x + 9 + y^2 + 16y + 64 = 25$

$x^2 + y^2 - 6x + 16y + 48 = 0$

10) Find the equation of a line that is parallel to $y = -\frac{3}{2}x + 3$ and passes through $(-4, 5)$. $m = -\frac{3}{2}$

$5 = -\frac{3}{2}(-4) + b$

$5 = \frac{12}{2} + b$

$5 = 6 + b$

$(-1 = b)$ so,

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

11) Find the equation of a line that is perpendicular to $y = \frac{1}{3}x - 7$ and passes through $(12, -6)$. $m_1 = \frac{1}{3}$

$m_2 = -3$

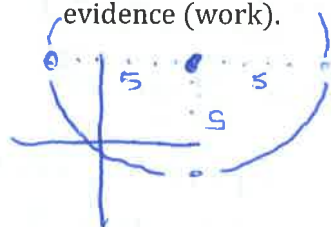
$-6 = -3(12) + b$

$-6 = -36 + b$

$30 = b$ so,

$y = -3x + 30$

12) Circle C has a center of $(3, 4)$ and a radius of 5. Does the point $(0, 10)$ lie on circle C? Show your evidence (work).



If $(0, 10)$ lies on \odot , then distance from $(3, 4)$, the center, to $(0, 10)$, would equal 5 units... so,

$d = \sqrt{(3-0)^2 + (4-10)^2}$ $d = \sqrt{9 + 36}$

$d = \sqrt{3^2 + (-6)^2}$

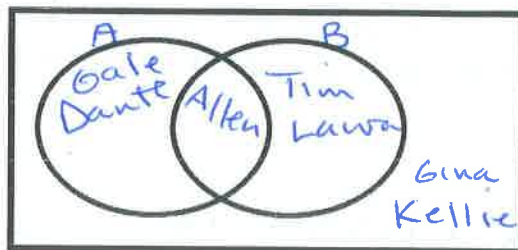
$d = \sqrt{45} = 3\sqrt{5} \neq 5$

Thus, $(0, 10)$ not on \odot

Probability Review: Venn Diagrams, Tables, & Words

- Event A: Gale, Allen, & Dante like scary movies
- Event B: Allen, Tim & Laura like comedy movies
- Gina & Kellie don't prefer either of those 2 types

TOTAL = 7



13) List the possible outcomes, or sample space for $A \cup B$. Gale, Dante, Allen, Tim, Laura

14) List the outcomes for $A \cap B$. Allen

15) List the outcomes for A' . Tim, Laura, Gina, Kellie

16) Find $P(B)$ $\frac{2}{7}$

17) Find $P(A \cup B)$ $\frac{5}{7}$

18) Find $P(A \cap B)$ $\frac{1}{7}$

"not" union of A & B

The table below represents a table about upperclassmen's suggestions for a class activity.

- 19) Find $P(11th)$ $\frac{14}{40}$
 20) Find $P(Dance)$ $\frac{17}{40}$
 21) Find $P(10th \cup Dance)$ $\frac{14+17-2}{40} = \frac{29}{40}$
 22) Find $P(Field Trip \cap 11th)$ $\frac{3}{40}$
 23) Find $P(12th \cap Talent Show)$ $\frac{38}{40}$
 24) Find $P(10th | Field Trip)$ $\frac{8}{12}$
 25) Find $P(Talent Show | 10th)$ $\frac{4}{14}$

	Talent Show	Field Trip	Dance	
10 th	4	8	2	14
11 th	5	3	6	14
12 th	2	1	9	12
	11	12	17	40

Mutually Exclusive vs Overlapping

26) Which of the following are **mutually exclusive**?

- A. Choosing a King or a Diamond in a deck of cards
 B. Choosing a band student or math student in a classroom
 C. Rolling 2 dice and getting an even sum or a sum less than 7
 D. Choosing a Jack or a 5 in a deck of cards

King of ♠ is overlap

could be both

2, 4, 6 overlap
2, 3, 4, 5, 6

ME

Check for Independent Events

27) Which of the following pair of events are **independent**?

- A. $P(A) = 0.08$; $P(B) = 0.4$; $P(A \cap B) = 0.12$
 B. $P(A) = 0.30$; $P(B) = 0.15$; $P(A \cap B) = 0.045$
 C. $P(A) = 0.16$; $P(B) = 0.24$; $P(A \cap B) = 0.32$

28) Use the data in the table to decide if liking PE is independent of your gender. Tip: You can check either male or female

$$P(M) \cdot P(F) = P(M \cap F)$$

$$\frac{38}{100} \cdot \frac{31}{100} = \frac{69}{100}$$

$$0.1178 = 0.69$$

(Dep)

	Do you like PE?		
	Yes	No	
Male	38	12	50
Female	31	19	50
	69	31	100

- A) $(0.08)(0.4) = 0.12$? FALSE (Dep)
 B) $(0.30)(0.15) = 0.045$? True (IND)
 C) $(0.16)(0.24) = 0.32$? False (Dep)

The sum of 2 dice

29) $P(\text{even sum or a sum} > 9)$

$$\frac{18}{36} + \frac{6}{36} - \frac{4}{36} = \frac{20}{36}$$

30) $(\text{sum} < 7 \text{ or a sum} > 10)$

$$\frac{15}{36} + \frac{3}{36} = \frac{18}{36}$$

31) $P(\text{odd sum or a sum} < 8)$

$$\frac{18}{36} + \frac{21}{36} - \frac{12}{36} = \frac{27}{36}$$

Calendar - A month is chosen from a year

- 32) Find the probability of choosing a month that begins with a vowel. $\frac{3}{12}$ III
 33) Find the probability of choosing a month starting with the letter M or J. $\frac{5}{12}$ IV
 34) Find the probability of selecting a month that begins and ends with a consonant. $\frac{8}{12}$ IX, III
 35) Find the probability of selecting a month that begins with a consonant and then selecting another month begins with a consonant (without replacement). $\frac{12}{132}$ $\frac{9}{12} \cdot \frac{8}{11}$
 36) Find the probability of choosing a month that starts with a vowel given that it ends in the letter R. $\frac{1}{4}$ (OCTOBER)

begin J F M A M J J A S O N D
 end Y Y H L Y E Y T R R R R