

## تم تحميل هذا الملف من موقع المناهج الإماراتية



## تجميع أسئلة وفق الهيكل الوزاري حسب منهج ريفيل

موقع المناهج ← المناهج الإماراتية ← الصف العاشر المتقدم ← رياضيات ← الفصل الثاني ← ملفات متنوعة ← الملف

تاريخ إضافة الملف على موقع المناهج: 2025-02-26 16:40:26

ملفات اكتب للمعلم اكتب للطالب الاختبارات الكترونية الاختبارات ا حلول اعروض بوربوينت أوراق عمل  
منهج انجليزي املخصات وتقارير ا مذكرات وبنوك الامتحان النهائي للمدرس

المزيد من مادة  
رياضيات:

إعداد: Alsaeedi Fatima

## التواصل الاجتماعي بحسب الصف العاشر المتقدم



صفحة المناهج  
الإماراتية على  
فيسبوك

الرياضيات

اللغة الانجليزية

اللغة العربية

التربية الاسلامية

المواد على تلغرام

## المزيد من الملفات بحسب الصف العاشر المتقدم والمادة رياضيات في الفصل الثاني

عرض بوربوينت تجميع أسئلة وفق الهيكل الوزاري منهج بريدج

1

عرض بوربوينت حل درس مساحة الدائرة والقطاع الدائري

2

ورقة عمل درس الدوائر والمحيط

3

حل ملزمة وفق الهيكل الوزاري بريدج

4

حل تجميع أسئلة وفق الهيكل الوزاري ريفيل المسار المتقدم

5

# EOT2 – 10 Advance

## Fatima Alsaeedi

لا تنسى الاستعانة بالله

اللهم إني أسألك فهم النبيين وحفظ المرسلين  
والملائكة المقربين.

رب أدخلني مدخل صدق، وأخرجني مخرج  
صدق، واجعل لي من لدنك سلطانا نصيراً.

اللَّهُمَّ لَا سَهْلَ إِلَّا مَا جَعَلْتَهُ سَهْلًا وَأَنْتَ تَجْعَلُ  
الْحَزْنَ سَهْلًا إِذَا شِئْتَ.

اللهم ارزقهم قوة الحفظ، وسرعة الفهم وصفاء  
الذهن، اللهم ألهمهم الصواب في الجواب.

اللهم انى توكلت عليك، وسلمت أمري إليك، لا  
ملجأ ولا منجى منك إلا إليك آمنت بكتابك الذي  
أنزلت ونبيك الذي أرسلت.

Academic Year	2024/2025
العام الدراسي	
Term	2
الفصل	
Subject	Mathematics/Reveal
المادة	الرياضيات/ريفييل
Grade	10
الصف	
Stream	Advanced
المسار	المتقدم

Number of MCQ عدد الأسئلة الموضوعية	15
Marks of MCQ درجة الأسئلة الموضوعية	4
Number of FRQ عدد الأسئلة المقالية	5
Marks per FRQ الدرجات للأسئلة المقالية	5-10
Type of All Questions نوع كافة الأسئلة	MCQ/ الأسئلة الموضوعية FRQ/ الأسئلة المقالية
Maximum Overall Grade الدرجة القصوى الممكنة	100
Exam Duration - مدة الامتحان	150 minutes
Mode of Implementation - طريقة التطبيق	SwiftAssess & Paper-Based
Calculator	Allowed
الألة الحاسبة	مسموحة

# MCQ - (4 marks)

1	Solve problems involving the circumference of a circle	44-50	230
2	Measuring Angles and Arcs	1-9	237
		12-19	237
3	Arcs and Chords	1-9	245
		17-18	246
4	Inscribed Angles	1-10	251
5	Sample Spaces	16-23	371
6	Probability and Counting	15-20	379
		21	380
7	Probability and the Multiplication Rule	1-10	401
		11-12	402
8	Two-Way Frequency Tables	5-8	423

# MCQ - (4 marks)

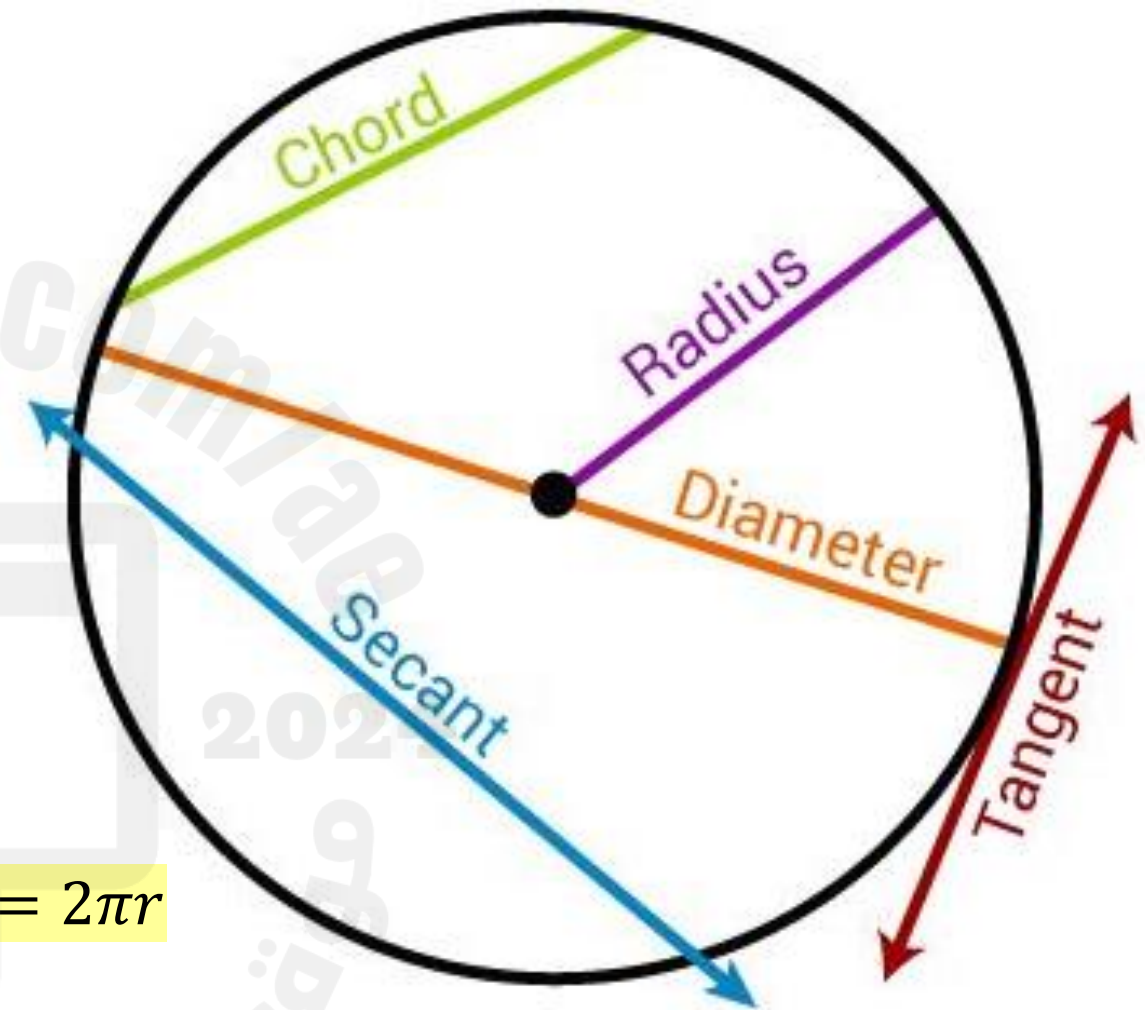
9	Solving Systems of Equations Graphically	1-12	533
10	Solving Systems of Equations Algebraically	1-14	539
11	Systems of Equations in Three Variables	1-15	557
12	Graphing Quadratic Functions	13-24	10
13	Solving Quadratic Equations by Graphing	1-23	17
14	Complex Number	19-37	25
15	Solving Quadratic Equations by Factoring	15-32	31

### Key Concept:-

Radius Formula  $r = \frac{d}{2}$

Diameter Formula  $d = 2r$

Circumference Formula  $C = \pi d$  **OR**  $C = 2\pi r$



**44. WHEELS** Zack is designing wheels for a concept car. The diameter of the wheel is 18 inches. Zack wants to make spokes in the wheel that run from the center of the wheel to the rim. In other words, each spoke is a radius of the wheel. How long are these spokes?

- A) 3 in      B) 18 in      C) 9 in      D) 2 in

**47. EXERCISE HOOPS** Taiga wants to make a circular hoop that he can twirl around his body for exercise. He will use a tube that is 2.5 meters long.

a. What will be the diameter of Taiga's exercise hoop? Round your answer to the nearest thousandth of a meter.

- A) 0.398 m      B) 1.296 m      C) 2.5 m      D) 0.796 m

b. What will be the radius of Taiga's exercise hoop? Round your answer to the nearest thousandth of a meter.

- A) 0.398 m      B) 1.296 m      C) 2.5 m      D) 0.796 m



- 46. REASONING** Three identical circular coins are lined up in a row as shown. The distance between the centers of the first and third coins is 3.2 centimeters. What is the radius of one of these coins?



- A) 3.2 cm      B) 0.8 cm      C) 0.2 cm      D) 1.6 cm

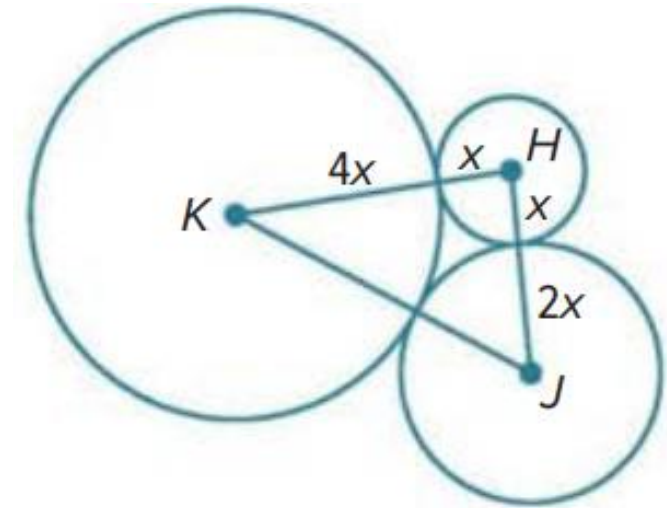
- 45. PRECISION** Kathy slices through a circular cake. The cake has a diameter of 14 inches. The slice that Kathy made is straight and has a length of 11 inches. Did Kathy cut along a *radius*, a *diameter*, or a *chord* of the circle?

- A) *Radius*      B) *Diameter*      C) *Chord*      D) *None*

- 48. WRITE** How can we describe the relationships that exist between circles and line segments?

49. **PERSEVERE** The sum of the circumferences of circles  $H$ ,  $J$ , and  $K$  shown at the right is  $56\pi$  units. Find  $KJ$ .

- A) 8 units      B) 16 units      C) 24 units      D) 14 units

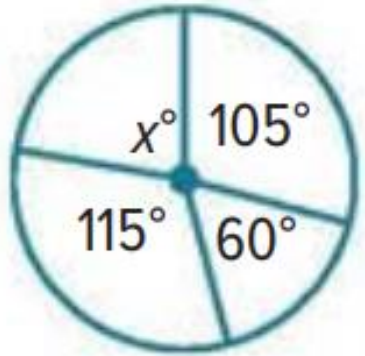




Find the value of  $x$ .

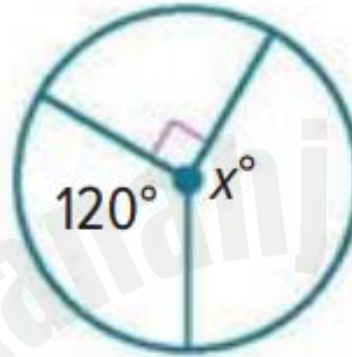
The sum of the measures of the central angles of a circle with no interior points in common is  $360^\circ$ .

1.



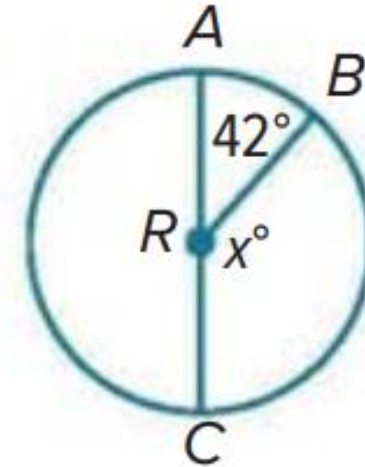
- A)  $30^\circ$
- B)  $80^\circ$
- C)  $60^\circ$
- D)  $63^\circ$

2.



- A)  $150^\circ$
- B)  $180^\circ$
- C)  $170^\circ$
- D)  $163^\circ$

3.



- A)  $130^\circ$
- B)  $138^\circ$
- C)  $150^\circ$
- D)  $123^\circ$

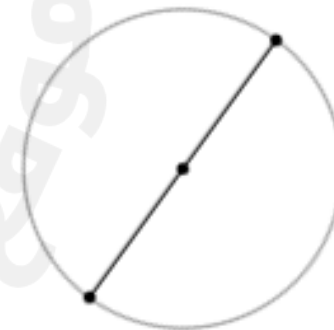
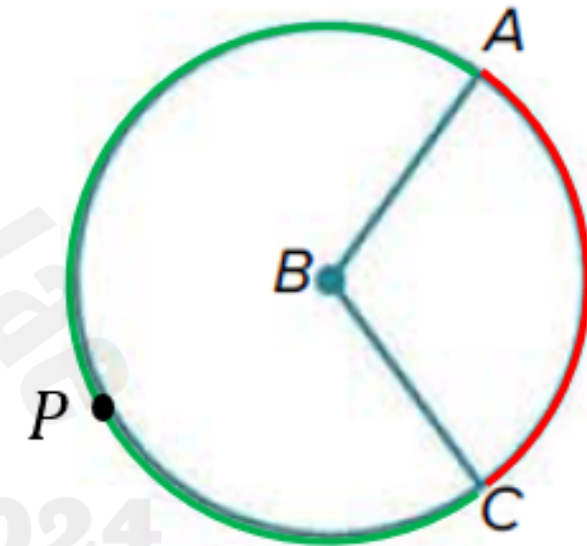
An **arc** is part of a circle that is defined by two arc endpoints. A central angle separates the circle into two arcs with measures related to the measure of the central angle.

A **minor arc** has a measure **less** than  $180^\circ$ .  $\widehat{AC}$

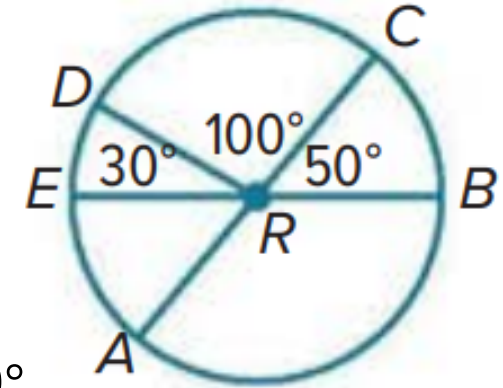
A **major arc** has a measure **greater** than  $180^\circ$ .

$\widehat{APC}$

A **semicircle** is an arc that measures exactly  $180^\circ$ .



$\overline{AC}$  and  $\overline{EB}$  are diameters of  $\odot R$ . Identify each arc as a *major arc*, *minor arc*, or *semicircle*. Then find its measure.



4.  $m \widehat{EA}$

A) minor arc;  $50^\circ$       B) major arc;  $50^\circ$

C) minor arc;  $100^\circ$       D) semicircle;  $50^\circ$

5.  $m \widehat{CB}$

A) minor arc;  $50^\circ$       B) major arc;  $50^\circ$

C) minor arc;  $100^\circ$       D) semicircle;  $50^\circ$

6.  $m \widehat{DC}$

A) minor arc;  $50^\circ$       B) major arc;  $50^\circ$

C) minor arc;  $100^\circ$       D) semicircle;  $50^\circ$

7.  $m \widehat{DEB}$

A) minor arc;  $50^\circ$       B) major arc;  $210^\circ$

C) minor arc;  $30^\circ$       D) semicircle;  $180^\circ$

8.  $m \widehat{AB}$

A) minor arc;  $130^\circ$       B) major arc;  $50^\circ$

C) minor arc;  $30^\circ$       D) semicircle;  $50^\circ$

9.  $m \widehat{CDA}$

A) minor arc;  $50^\circ$       B) major arc;  $210^\circ$

C) minor arc;  $30^\circ$       D) semicircle;  $180^\circ$

$\overline{PR}$  and  $\overline{QT}$  are diameters of  $\odot A$ . Find each measure.

12.  $m \widehat{UPQ}$

A)  $130^\circ$       B)  $90^\circ$

C)  $50^\circ$       D)  $180^\circ$

14.  $m \widehat{UTS}$

A)  $130^\circ$       B)  $90^\circ$

C)  $50^\circ$       D)  $180^\circ$

13.  $m \widehat{PQR}$

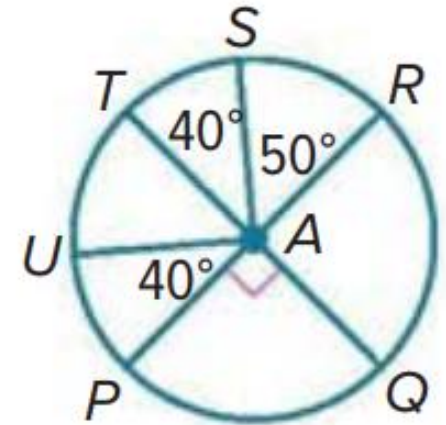
A)  $130^\circ$       B)  $90^\circ$

C)  $50^\circ$       D)  $180^\circ$

15.  $m \widehat{RS}$

A)  $130^\circ$       B)  $90^\circ$

C)  $50^\circ$       D)  $180^\circ$



$\overline{PR}$  and  $\overline{QT}$  are diameters of  $\odot A$ . Find each measure.

18.  $m\widehat{PQS}$

A)  $320^\circ$       B)  $140^\circ$

C)  $130^\circ$       D)  $230^\circ$

16.  $m\widehat{RSU}$

A)  $320^\circ$       B)  $140^\circ$

C)  $130^\circ$       D)  $230^\circ$

19.  $m\widehat{PRU}$

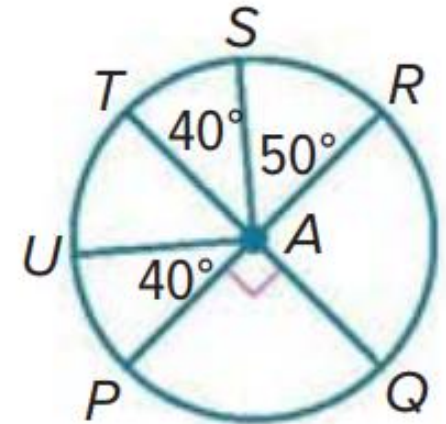
A)  $320^\circ$       B)  $140^\circ$

C)  $130^\circ$       D)  $230^\circ$

17.  $m\widehat{STP}$

A)  $320^\circ$       B)  $140^\circ$

C)  $130^\circ$       D)  $230^\circ$



## Learn Arcs and Chords

A **chord** is a segment with endpoints on a circle. If a chord is not a diameter, then its endpoints divide the circle into a major and minor arc.

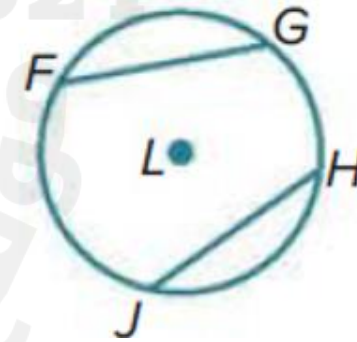
### Theorem 5.3

#### Words

In the same circle or in congruent circles, two minor arcs are congruent if and only if their corresponding chords are congruent.

#### Example

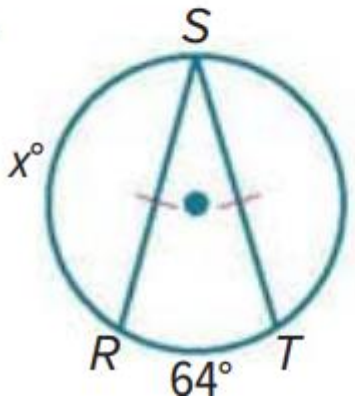
$\widehat{FG} \cong \widehat{HJ}$  if and only if  $\overline{FG} \cong \overline{HJ}$ .





**REGULARITY** Find the value of  $x$ .

1.



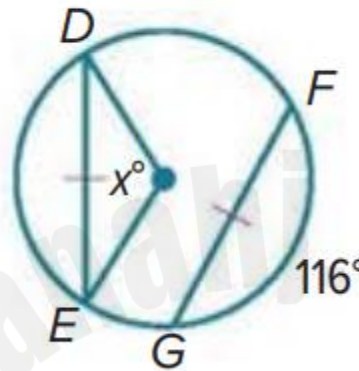
A) 143

B) 148

C) 116

D) 82

2.



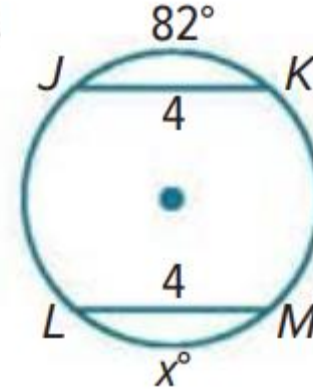
A) 143

B) 148

C) 116

D) 82

3.



A) 143

B) 148

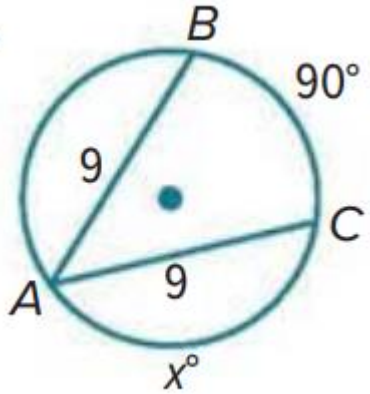
C) 116

D) 82



**REGULARITY** Find the value of  $x$ .

4.



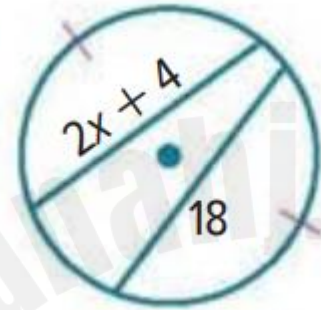
A) 135

B) 2

C) 7

D) 12

5.



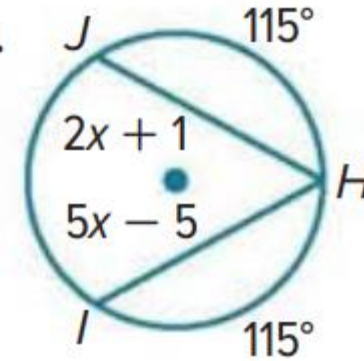
A) 135

B) 2

C) 7

D) 12

6.



A) 135

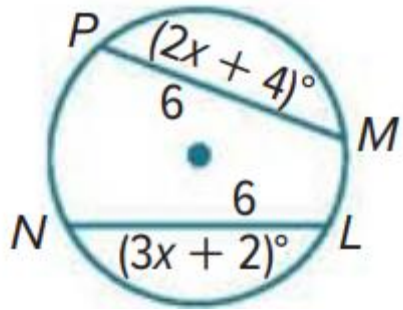
B) 2

C) 7

D) 12

**REGULARITY** Find the value of  $x$ .

7.



A) 135

B) 13

C) 1

D) 6

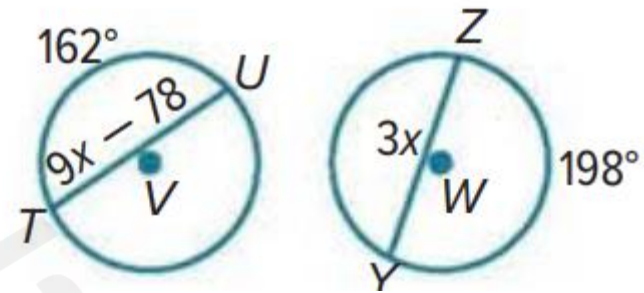
8.  $\odot M \cong \odot P$ 

A) 135

B) 13

C) 1

D) 6

9.  $\odot V \cong \odot W$ 

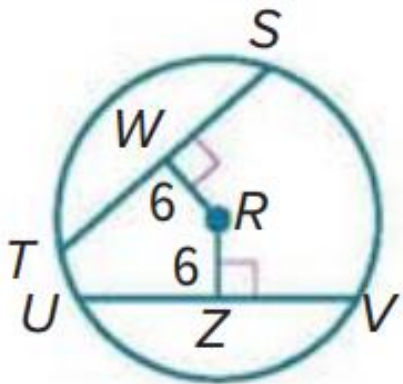
A) 135

B) 13

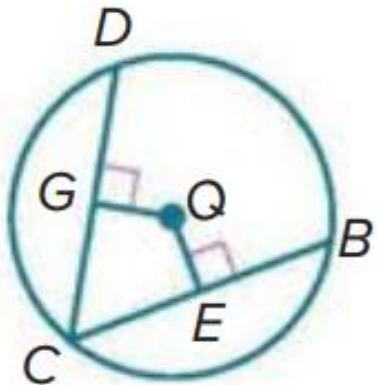
C) 1

D) 6

17. In  $\odot R$ ,  $TS = 21$  and  $UV = 3x$ . What is the value of  $x$ ?



18. In  $\odot Q$ ,  $\overline{CD} \cong \overline{CB}$ ,  $GQ = x + 5$ , and  $EQ = 3x - 6$ . What is the value of  $x$ ?



A) 5.5

B) 7

C) 21

D) 1.6

A) 5.5

B) 7

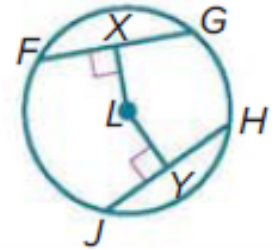
C) 21

D) 1.6

#### Theorem 5.6

**Words** In the same circle or in congruent circles, chords are congruent if and only if they are equidistant from the center.

**Example**  $\overline{FG} \cong \overline{JH}$  if and only if  $LX = LY$ .



# Learn Inscribed Angles

## Theorem 5.7: Inscribed Angle Theorem

### Words

If an angle is inscribed in a circle, then the measure of the angle equals one half the measure of its intercepted arc.

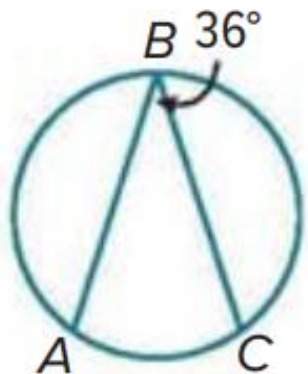
### Example

$$m\angle 1 = \frac{1}{2} m\widehat{AB} \text{ and}$$
$$m\widehat{AB} = 2m\angle 1$$



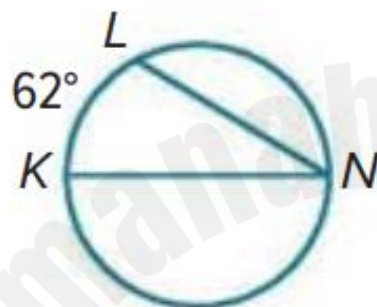
Find each measure.

1.  $m \widehat{AC}$



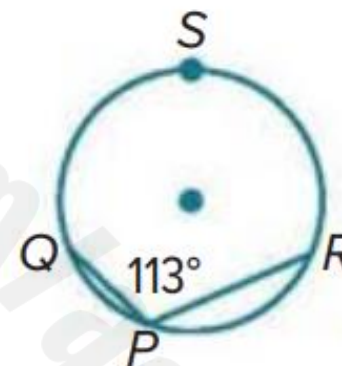
- A)  $72^\circ$
- B)  $226^\circ$
- C)  $31^\circ$
- D)  $116^\circ$

2.  $m \angle N$



- A)  $72^\circ$
- B)  $226^\circ$
- C)  $31^\circ$
- D)  $116^\circ$

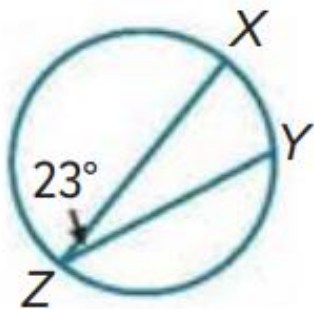
3.  $m \widehat{QSR}$



- A)  $72^\circ$
- B)  $226^\circ$
- C)  $31^\circ$
- D)  $116^\circ$

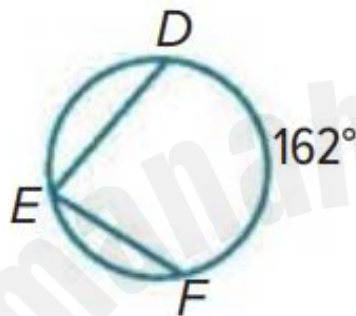
Find each measure.

4.  $m\widehat{XY}$



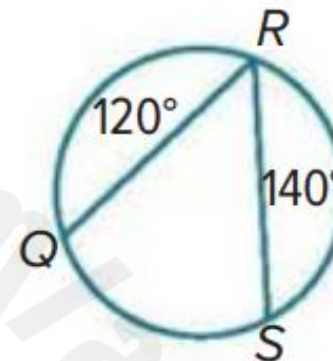
- A)  $81^\circ$
- B)  $226^\circ$
- C)  $50^\circ$
- D)  $46^\circ$

5.  $m\angle E$



- A)  $81^\circ$
- B)  $226^\circ$
- C)  $50^\circ$
- D)  $46^\circ$

6.  $m\angle R$



- A)  $81^\circ$
- B)  $226^\circ$
- C)  $50^\circ$
- D)  $46^\circ$



## Learn Inscribed Angles

### Theorem 5.8

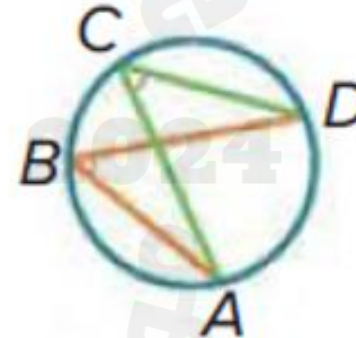
#### Words

If two inscribed angles of a circle intercept the same arc or congruent arcs, then the angles are congruent.

#### Example

$\angle B$  and  $\angle C$  both intercept  $\widehat{AD}$ .

So,  $\angle B \cong \angle C$ .





Find each measure.

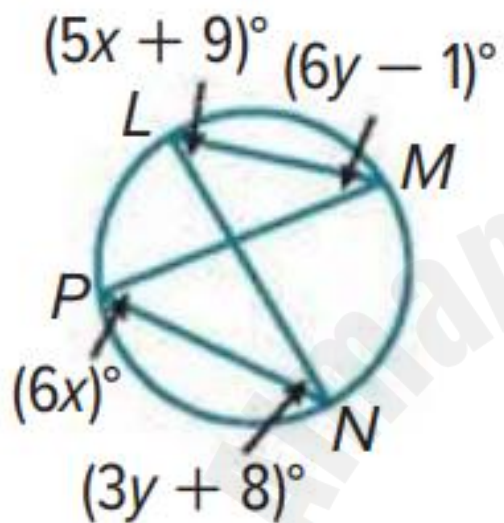
7.  $m\angle N$

A)  $3^\circ$

B)  $21^\circ$

C)  $9^\circ$

D)  $18^\circ$



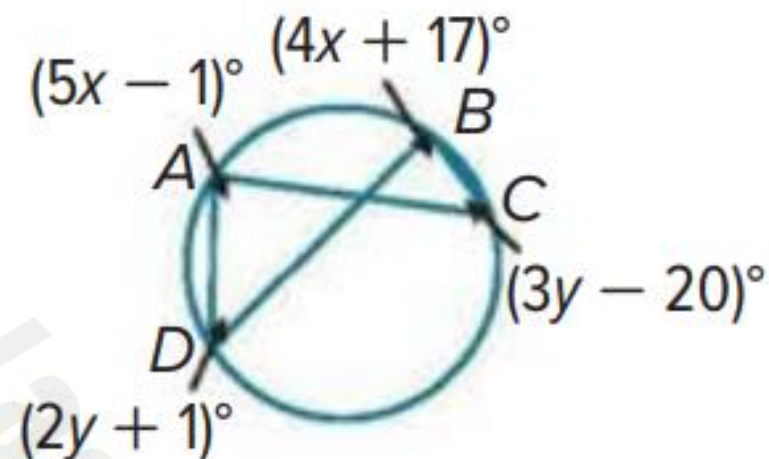
9.  $m\angle C$

A)  $3^\circ$

B)  $21^\circ$

C)  $9^\circ$

D)  $18^\circ$



8.  $m\angle L$

A)  $3^\circ$

B)  $21^\circ$

C)  $9^\circ$

D)  $18^\circ$

10.  $m\angle A$

A)  $3^\circ$

B)  $21^\circ$

C)  $9^\circ$

D)  $18^\circ$

Find the number of possible outcomes for each situation.

Fundamental counting principle :  $n_1 \times n_2 \times n_3 \times \dots$

**16. BASKETBALL** In a city basketball league there must be a minimum of 14 players on a team's roster. One 14-player team has three centers, four power forwards, two small forwards, three shooting guards, and the rest of the players are point guards. How many different 5-player teams are possible if one player is selected from each position?

- A) 144      B) 248      C) 60      D) 2592

**19. SCHOOL** Tala wears a school uniform that consists of a skirt or pants, a white shirt, a blue jacket or sweater, white socks, and black shoes. She has 3 pairs of pants, 3 skirts, 6 white shirts, 2 jackets, 2 sweaters, 6 pairs of white socks, and 3 pairs of black shoes.

- A) 144      B) 248      C) 60      D) 2592

**20. FOOD** A sandwich shop provides its customers with a number of choices for bread, meats, and cheeses. Provided one item from each category is selected, how many different sandwiches can be made?

- A) 144      B) 248      C) 60      D) 2592

Bread	Meats	Cheeses
White	Turkey	American
Wheat	Ham	Swiss
Whole Grain	Roast Beef	Provolone
	Chicken	Colby-Jack
		Muenster

Find the number of possible outcomes for each situation.

Fundamental counting principle :  $n_1 \times n_2 \times n_3 \times \dots$

**22. LICENSE PLATES** One state requires license plates to consist of three letters followed by three numbers. The letter "O" and the number "0" may not be used, but any other combination of letters or numbers is allowed. How many different license plates can be created?

- A) 12,310,111      B) 11,390,625      C) 11,490,226      D) 10,390,626

**23. COLLEGE** Jack has been offered a number of internships that could occur in 3 different months, in 4 different departments, and for 3 different companies. Jack is only available to complete his internship in July. How many different outcomes are there for his internship?

- A) 4      B) 24      C) 16      D) 12

Fundamental counting principle :  $n_1 \times n_2 \times n_3 \times \dots$

**17. VACATION RENTAL** Angelica is comparing vacation prices in Boulder, Colorado, and Sarasota, Florida. In Boulder, she can choose a 1- or 2-week stay in a 1- or 2-bedroom suite. In Sarasota, she can choose a 1-, 2-, or 3-week stay in a 2- or 3-bedroom suite, on the beach or not.

**a.** How many outcomes are available in Boulder?

- A) 4      B) 24      C) 16      D) 12

**b.** How many outcomes are available in Sarasota?

- A) 4      B) 24      C) 16      D) 12

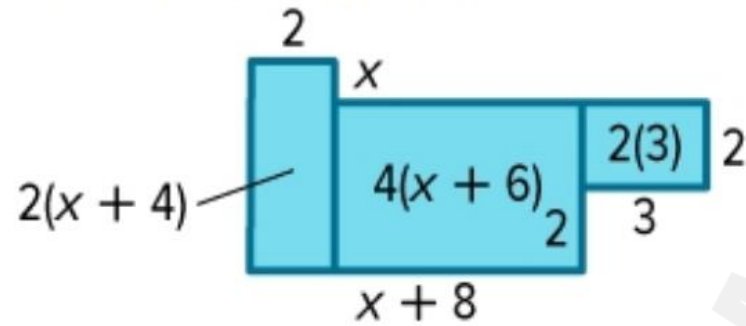
**c.** How many total outcomes are available?

- A) 4      B) 24      C) 16      D) 12

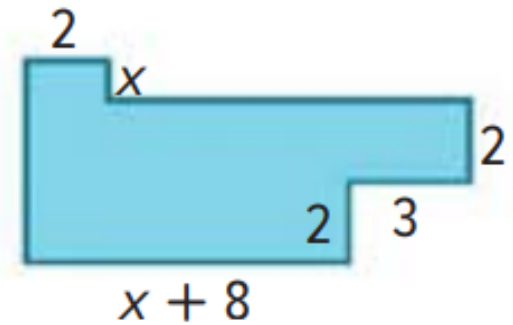
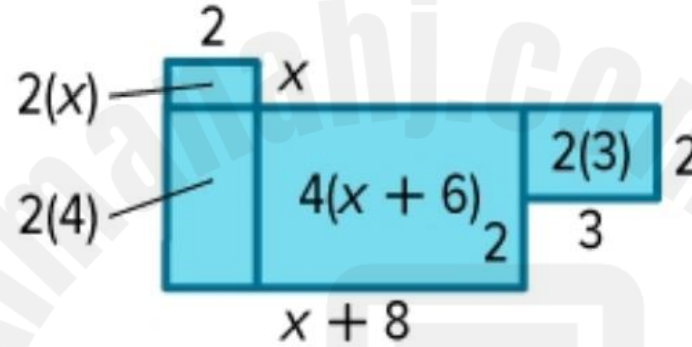


21. List six different expressions that could be used to evaluate the area of the composite figure.

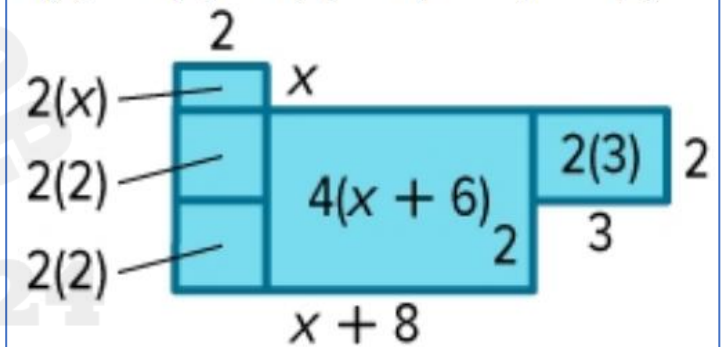
$$2(x + 4) + 4(x + 6) + 2(3)$$



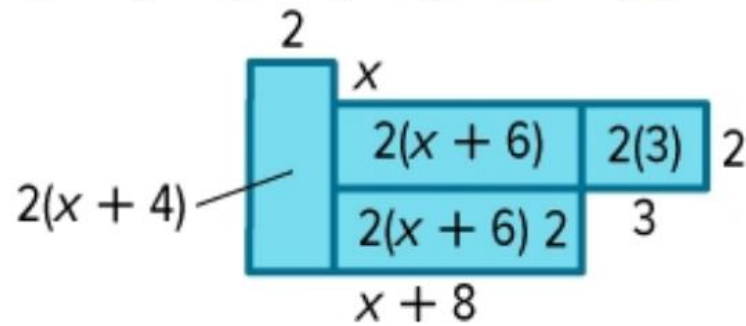
$$2(x) + 2(4) + 4(x + 6) + 2(3)$$



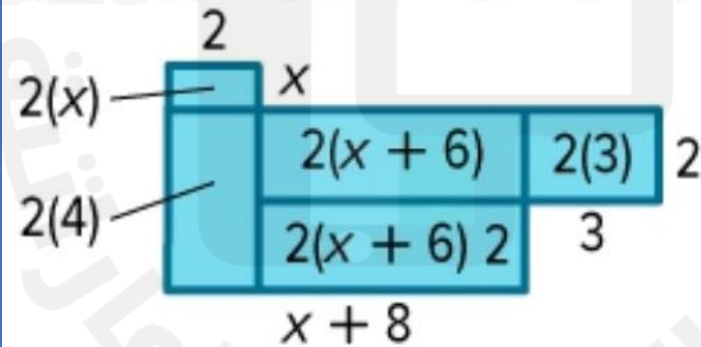
$$2(x) + 2(2) + 2(2) + 4(x + 6) + 2(3)$$



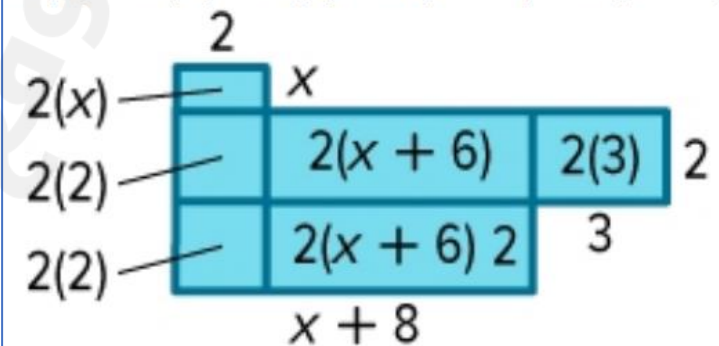
$$2(x + 4) + 2(x + 6) + 2(x + 6) + 2(3)$$



$$2(x) + 2(4) + 2(x + 6) + 2(x + 6) + 2(3)$$



$$2(x) + 2(2) + 2(2) + 2(x + 6) + 2(x + 6) + 2(3)$$



**18. TRAVEL** Maurice packs suits, shirts, and ties that can be mixed and matched. Use his packing list to draw a tree diagram to represent the sample space for possible suit combinations using one article from each category.

#### Maurice's Packing List

1. Suits: Gray, black, khaki
2. Shirts: White, light blue
3. Ties: Striped (But optional)

- 15. STATISTICS** A survey found that about 90% of the junior class is right-handed. If 1 junior is chosen at random out of 100 juniors, what is the probability that he or she is left-handed?

$$P(A') = 1 - P(A)$$

A)  $\frac{1}{10}$       B) 0.15      C) 0.98      D)  $\frac{507}{524}$

- 16. RAFFLE** Raul bought 24 raffle tickets out of 1545 tickets sold. What is the probability that Raul will not win the grand prize of the raffle?

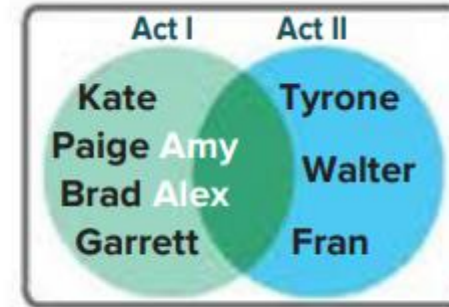
A)  $\frac{1}{10}$       B) 0.15      C) 0.98      D)  $\frac{507}{524}$

- 18. COLLEGE** In Evan's senior class of 240 students, 85% are planning to attend college after graduation. What is the probability that a senior chosen at random is not planning to attend college after graduation?

A)  $\frac{1}{10}$       B) 0.15      C) 0.98      D)  $\frac{507}{524}$



19. **DRAMA CLUB** The Venn diagram shows the cast members who are in Acts I and II of a school play. One of the students will be chosen at random to attend a statewide performing arts conference. Let  $A$  be the event that a cast member is in Act I of the play and let  $B$  be the event that a cast member is in Act II of the play.



- a. Find  $A \cap B$ .

A)  $A \cap B = \{Amy, Alex\}$

B)  $A \cap B = \{Amy, Fran\}$

C)  $A \cap B = \{Kate, Walter\}$

D)  $A \cap B = \{Kate, Alex\}$

- b. What is the probability that the student who is chosen to attend the conference is a cast member in only one of the two Acts of the play.

A)  $\frac{1}{10}$

B)  $\frac{7}{9}$

C)  $\frac{2}{7}$

D)  $\frac{5}{2}$

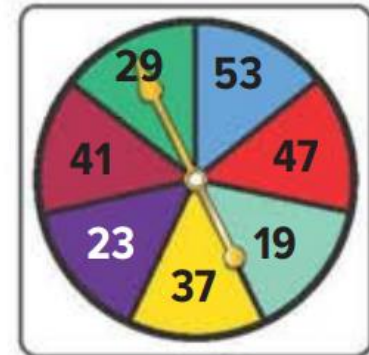
**17. MASCOT** At Riverview High School, 120 students were asked whether they prefer a lion or a timber wolf as the new school mascot. What is the probability that a randomly-selected student will have voted for a lion as the new school mascot?

- A) 1      B) 0.14      C) 0.275      D) 0.65

	Votes
Lion	78
Timber Wolf	42
Total	120

**20. GAMES** LaRae is playing a game that uses a spinner. What is the probability that the spinner will land on a prime number on her next spin?

- A) 1      B) 0.14      C) 0.275      D) 0.65



**21. SHOPPING** Raya asks 40 people outside the mall whether or not they visited for shopping or dining. She records the results in a Venn diagram. One person will be chosen at random to be interviewed on the local evening news. Find the probability that the person chosen will be someone who visited the mall for shopping and dining.

- A) 1      B) 0.14      C) 0.275      D) 0.65



Determine whether the events are *independent* or *dependent*. Explain your reasoning.

6. You roll an even number on a fair die, and then spin a spinner numbered 1 through 5 and it lands on an odd number.

A) Independent    B) Dependent    C) Both    D) None

7. An ace is drawn from a standard deck of 52 cards, and is not replaced. Then, a second ace is drawn.

A) Independent    B) Dependent    C) Both    D) None

8. In a bag of 3 green and 4 blue marbles, a blue marble is drawn and not replaced. Then, a second blue marble is drawn.

A) Independent    B) Dependent    C) Both    D) None

9. You roll two fair dice and roll a 5 on each.

A) Independent    B) Dependent    C) Both    D) None

1. **CLOTHING** Omari has two pairs of red socks and two pairs of white socks in a drawer. He has a drawer with 2 red T-shirts and 1 white T-shirt. If he randomly chooses a pair of socks from the sock drawer and a T-shirt from the T-shirt drawer, what is the probability that he gets a pair of red socks and a white T-shirt?

$$P(A \text{ and } B) = P(A) \cdot P(B)$$

A) 34%      B) 25%      C) 8%      D) 17%

2. Phyllis drops a penny in a pond, and then she drops a nickel in the pond. What is the probability that both coins land with tails showing?

A) 34%      B) 25%      C) 8%      D) 17%

3. A die is rolled and a penny is flipped. Find the probability of rolling a two and landing on a tail.

A) 34%      B) 25%      C) 8%      D) 17%



4. A bag contains 3 red marbles, 2 green marbles, and 4 blue marbles. A marble is drawn randomly from the bag and replaced before a second marble is chosen. Find the probability that both marbles are blue.

$$P(A \text{ and } B) = P(A) \cdot P(B)$$

A) 24%      B) 20%      C) 8%      D) 27%

5. The forecast predicts a 40% chance of rain on Tuesday and a 60% chance on Wednesday. If these probabilities are independent, what is the chance that it will rain on both days?

A) 24%      B) 20%      C) 8%      D) 27%

10. **LOTTERY** Mr. Hanes places the names of four of his students, Joe, Sofia, Hayden, and Bonita, on slips of paper. From these, he intends to randomly select two students to represent his class at the robotics convention. He draws the name of the first student, sets it aside, then draws the name of the second student. What is the probability he draws Sofia, then Joe?

A) 24%      B) 20%      C) 8%      D) 27%

- 11. CARDS** A card is drawn from a standard deck of playing cards and is not replaced. Then a second card is drawn. Find the probability the first card is a jack of spades and the second card is black.

$$P(A \text{ and } B) = P(A) \cdot P(B|A)$$

A)  $\frac{24}{2357}$

B)  $\frac{24}{2414}$

C)  $\frac{25}{2652}$

D)  $\frac{21}{2357}$

- 12. INTRAMURAL SPORTS** The table shows the color and number of jerseys available for the intramural volleyball tournament. If each jersey is given away randomly, what is the probability that the first and second jerseys given away are both red?

Jersey Color	Amount
blue	20
white	15
red	25
black	10

A)  $\frac{20}{141}$

B)  $\frac{20}{161}$

C)  $\frac{20}{147}$

D)  $\frac{21}{212}$

**5. SCHOOL** The two-way frequency table compares data about students in a class who completed or did not complete homework and those who passed or did not pass an exam. How many students completed their homework and passed the exam? Identify whether marginal or joint frequencies are used.

	Completed Homework	Did Not Complete Homework	Totals
Passed Exam	18	2	20
Did Not Pass Exam	4	2	6
Totals	22	4	26

A) 4; joint frequency

B) 4; marginal frequency

C) 18; joint frequency

D) 18; marginal frequency

**marginal frequencies:** Totals row and Totals column.  
**joint frequencies:** interior of the table.



6. **MOVIES** Raquel surveys 160 people to determine if they prefer drama or comedy movies. The relative frequency table shows the data collected from the survey. Determine whether gender is independent of movie type preference. Explain your reasoning.

	Drama	Comedy	Totals
Male	12.5%	25%	37.5%
Female	46.9%	15.6%	62.5%
Totals	59.4%	40.6%	100%

A) Independent

B) Not Independent

7. **TECHNOLOGY** For a business report on technology use, Darnell asks a random sample of 72 shoppers whether they own a smart phone and whether they own a tablet computer. His survey shows that out of 51 shoppers who own smart phones, 9 of them also own a tablet, while out of 21 shoppers who do not own smart phones, 15 of them do not own tablets either. Find the conditional probability that a shopper has a tablet, given that he or she has a smart phone. Justify your reasoning.

A) 17.7%

B) 12.2%

C) 18.7%

D) 27.1%

	Owens a Tablet	Does Not Own a Tablet	Totals
Owens a Smart Phone	9	42	51
Does Not Own a Smart Phone	6	15	21
Totals	15	57	72

	Owens a Tablet	Does Not Own a Tablet	Totals
Owens a Smart Phone	$\frac{9}{51} = 17.6\%$	$\frac{42}{51} = 82.4\%$	$\frac{51}{51} = 100\%$
Does Not Own a Smart Phone	$\frac{6}{21} = 28.6\%$	$\frac{15}{21} = 71.4\%$	$\frac{21}{21} = 100\%$
Totals	$\frac{15}{72} = 20.8\%$	$\frac{57}{72} = 79.2\%$	$\frac{72}{72} = 100\%$

**Key Concept: Conditional Probability**

The conditional probability of  $B$  given  $A$  is

$$P(B|A) = \frac{P(A \text{ and } B)}{P(A)}, \text{ where } P(A) \neq 0.$$

8. **CONSTRUCT ARGUMENTS** Paz asks a random sample of seniors at her high school whether they own a car and whether they have a job. The results of the survey are shown in the two-way relative frequency table. Paz says that the conditional probability that a student has a job given that he or she has a car is 46.7%. Do you agree? Justify your argument.

	Has a Job	Does Not Have a Job	Totals
Has a Car	21.9%	12.5%	34.4%
Does Not Have a Car	25%	40.6%	65.6%
Totals	46.9%	53.1%	100%

A) 24.2%

B) 20.7%

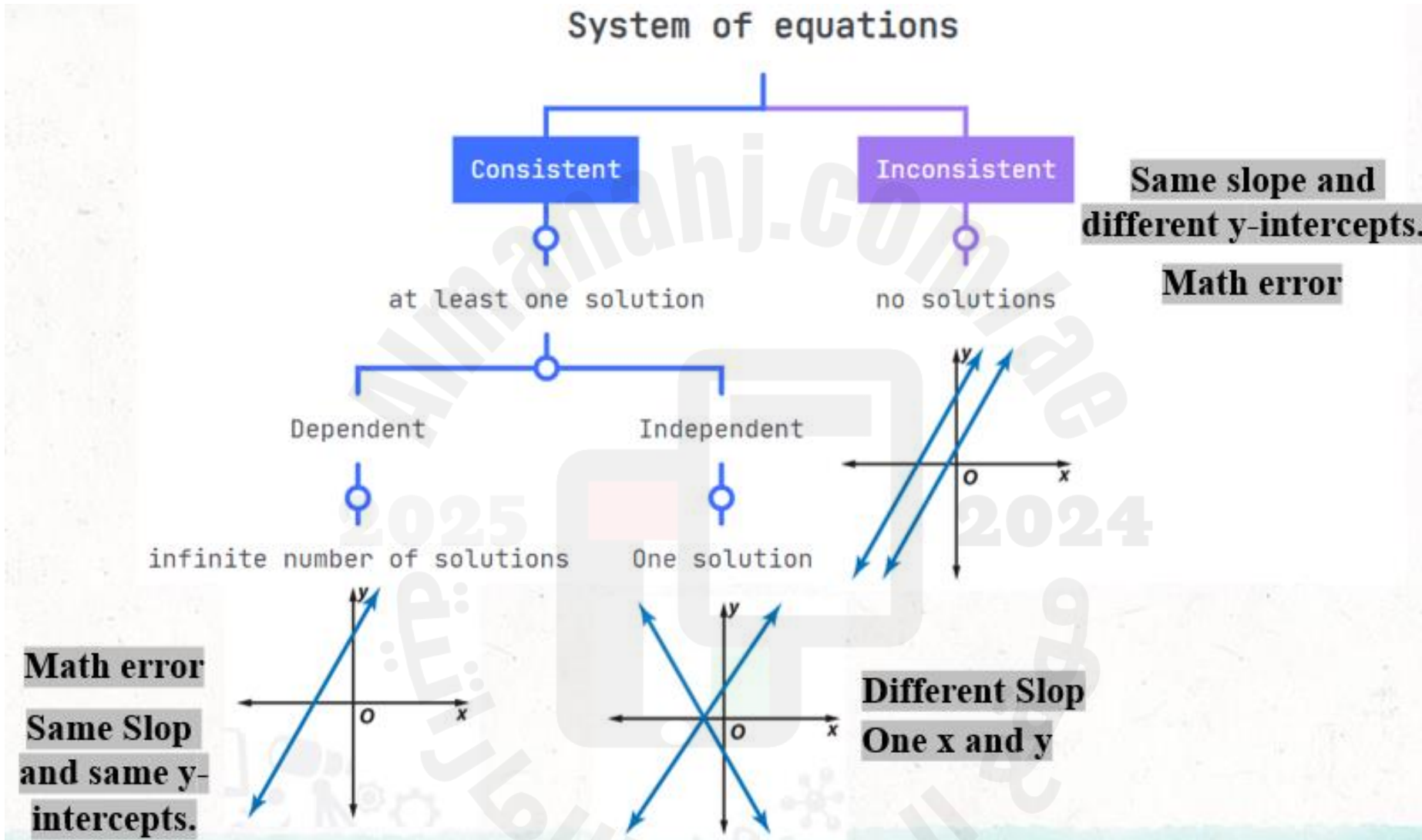
C) 63.7%

D) 27.2%

**Key Concept: Conditional Probability**

The conditional probability of  $B$  given  $A$  is

$$P(B|A) = \frac{P(A \text{ and } B)}{P(A)}, \text{ where } P(A) \neq 0.$$



Determine the number of solutions for each system. Then state whether the system of equations is *consistent* or *inconsistent* and whether it is *independent* or *dependent*.

1.  $y = 3x$   
 $y = -3x + 2$

- A) Consistent      B) Inconsistent  
 C) Independent    D) Dependent  
 E) One Solution    F) No Solution  
 G) infinitely many

2.  $y = x - 5$   
 $-2x + 2y = -10$

- A) Consistent      B) Inconsistent  
 C) Independent    D) Dependent  
 E) One Solution    F) No Solution  
 G) infinitely many

3.  $2x - 5y = 10$   
 $3x + y = 15$

- A) Consistent      B) Inconsistent  
 C) Independent    D) Dependent  
 E) One Solution    F) No Solution  
 G) infinitely many



Determine the number of solutions for each system. Then state whether the system of equations is *consistent* or *inconsistent* and whether it is *independent* or *dependent*.

4.  $3x + y = -2$   
 $6x + 2y = 10$

- A) Consistent      B) Inconsistent  
 C) Independent    D) Dependent  
 E) One Solution    F) No Solution  
 G) infinitely many

5.  $x + 2y = 5$   
 $3x - 15 = -6y$

- A) Consistent      B) Inconsistent  
 C) Independent    D) Dependent  
 E) One Solution    F) No Solution  
 G) infinitely many

6.  $3x - y = 2$   
 $x + y = 6$

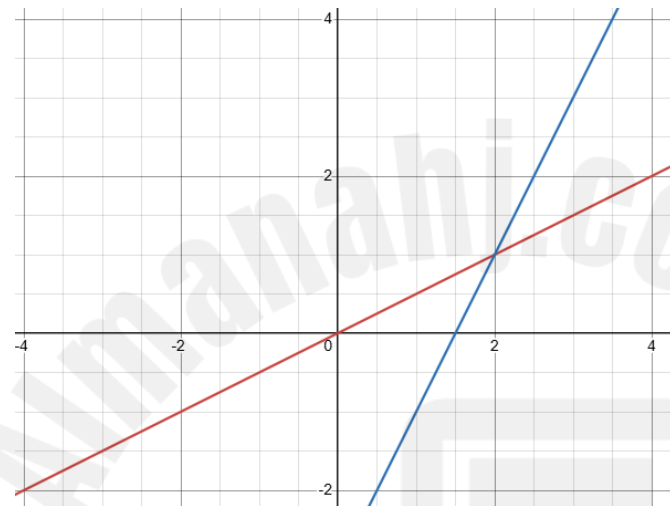
- A) Consistent      B) Inconsistent  
 C) Independent    D) Dependent  
 E) One Solution    F) No Solution  
 G) infinitely many



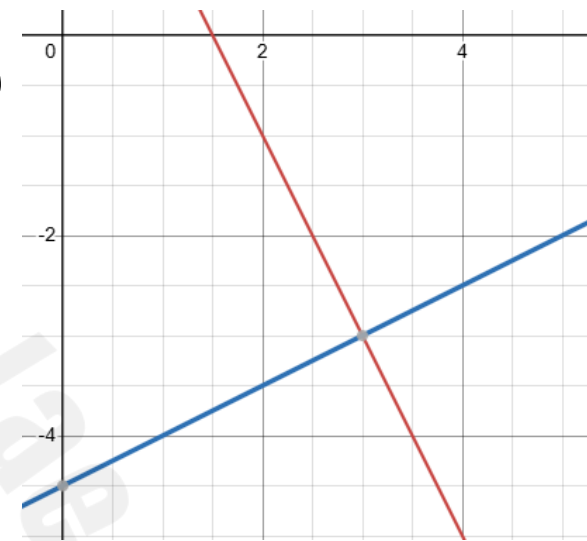
Solve the system of equations by graphing.

$$\begin{aligned} 7. \quad x - 2y &= 0 \\ y &= 2x - 3 \end{aligned}$$

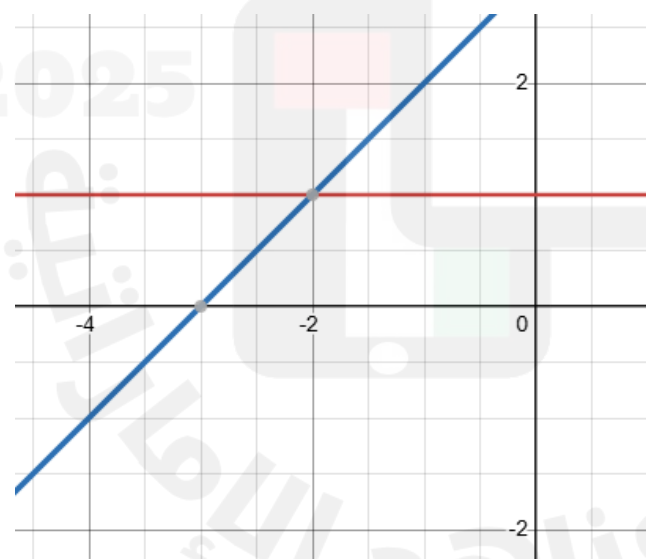
A)



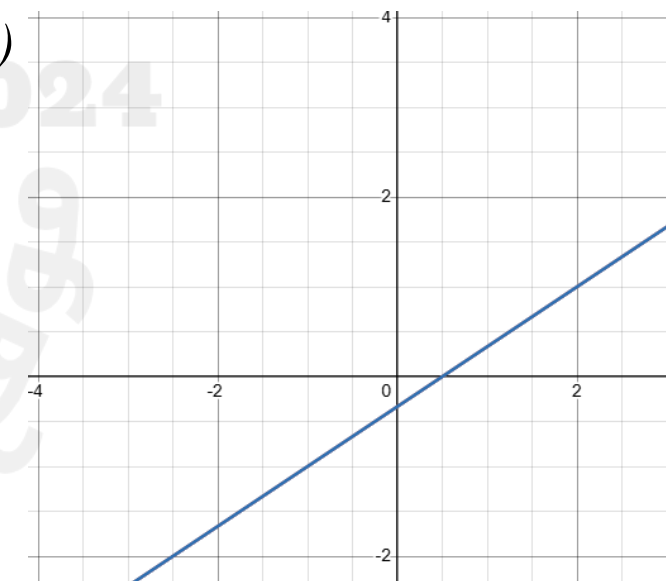
B)



C)



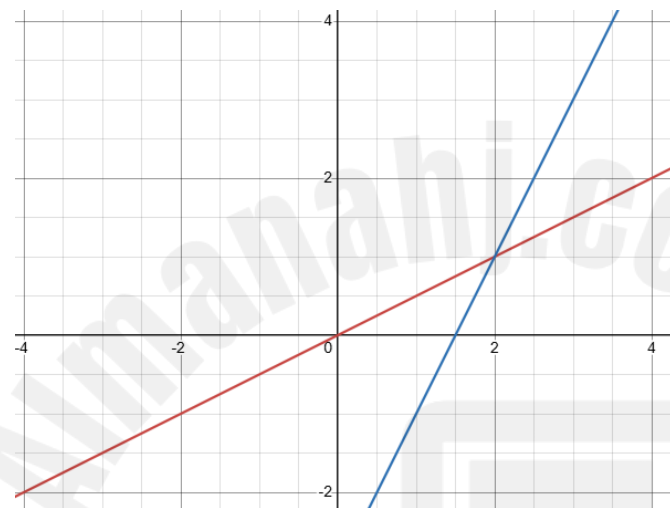
D)



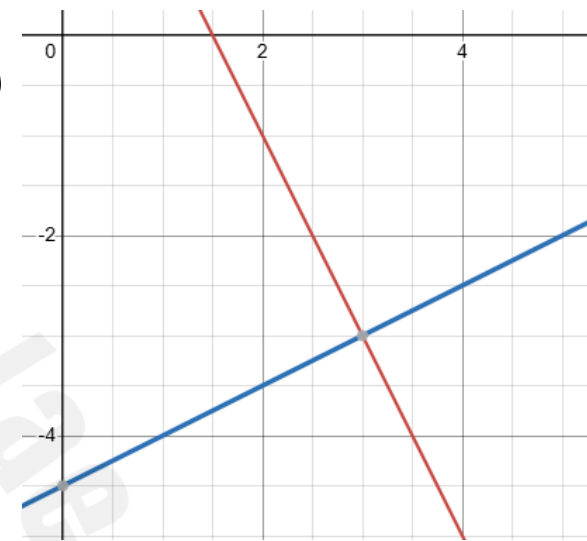
Solve the system of equations by graphing.

8.  $-4x + 6y = -2$   
 $2x - 3y = 1$

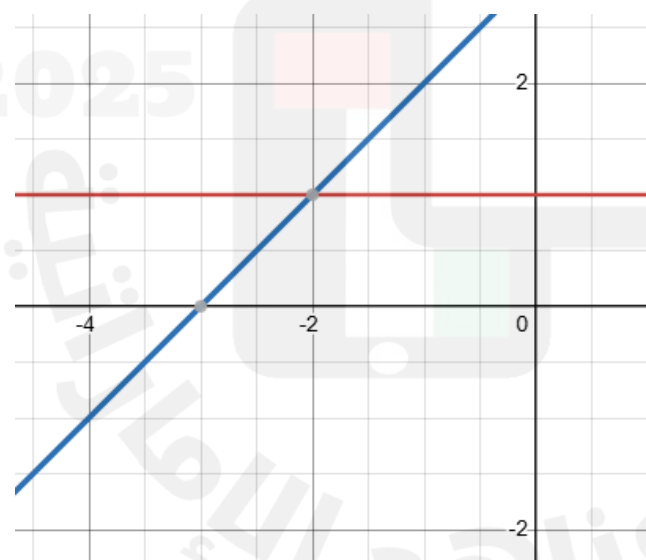
A)



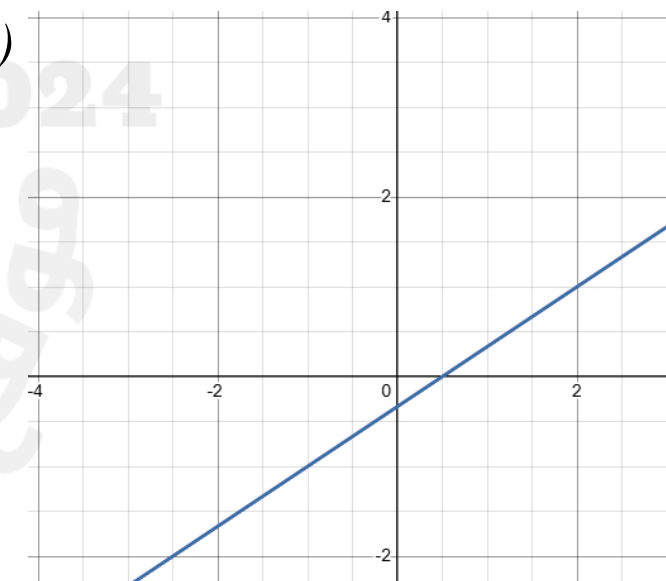
B)



C)



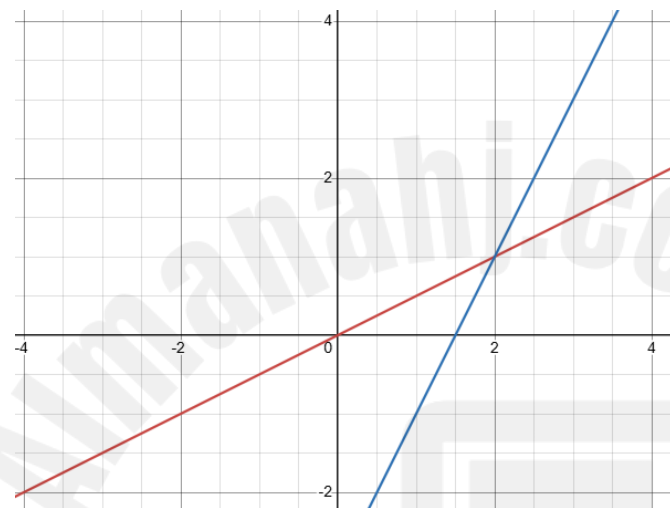
D)



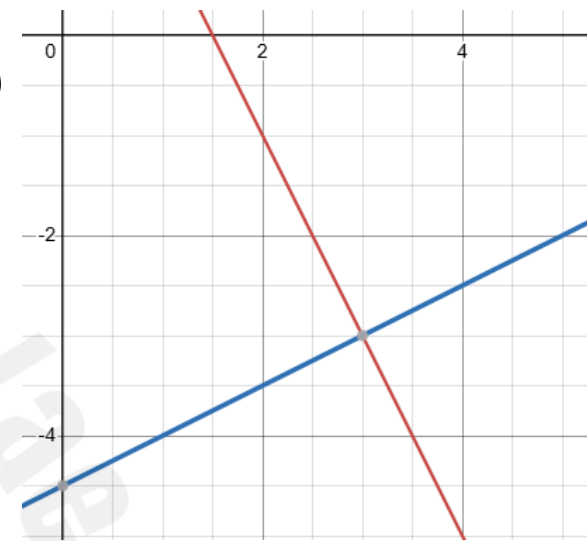
Solve the system of equations by graphing.

$$\begin{aligned} 9. \quad 2x + y &= 3 \\ y &= \frac{1}{2}x - \frac{3}{2} \end{aligned}$$

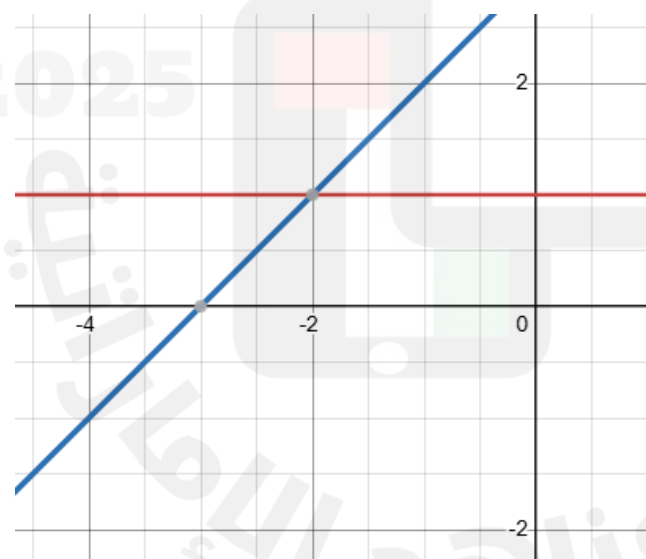
A)



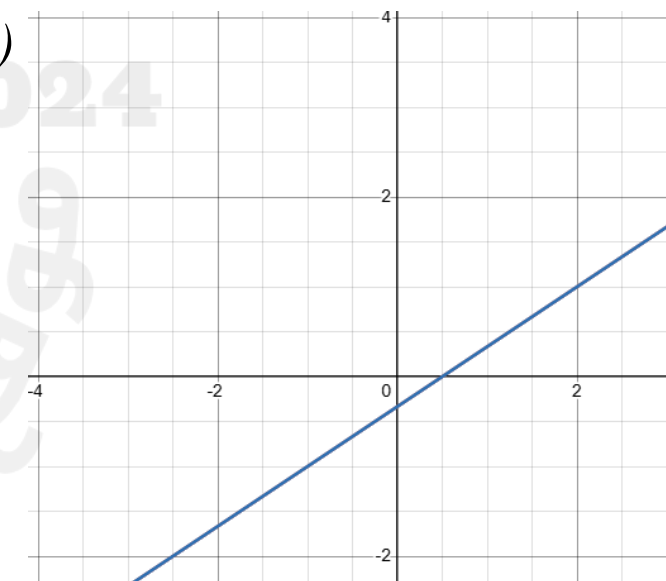
B)



C)



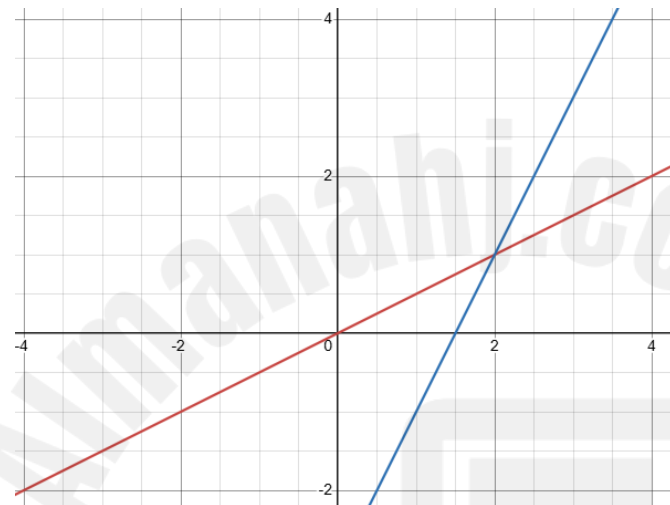
D)



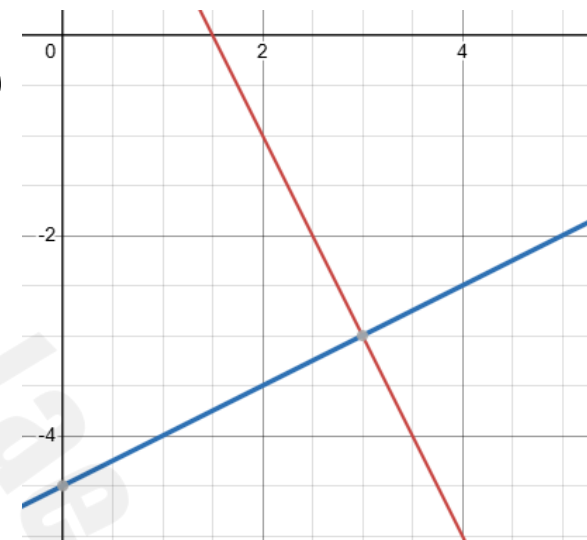
Solve the system of equations by graphing.

10.  $y - x = 3$   
 $y = 1$

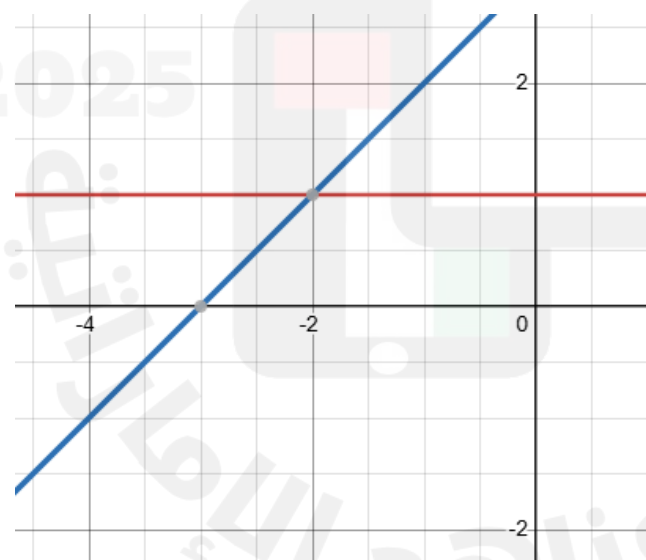
A)



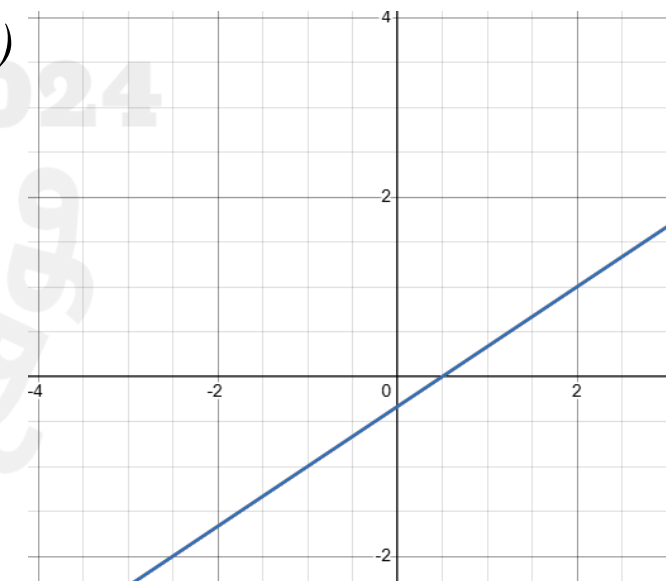
B)



C)



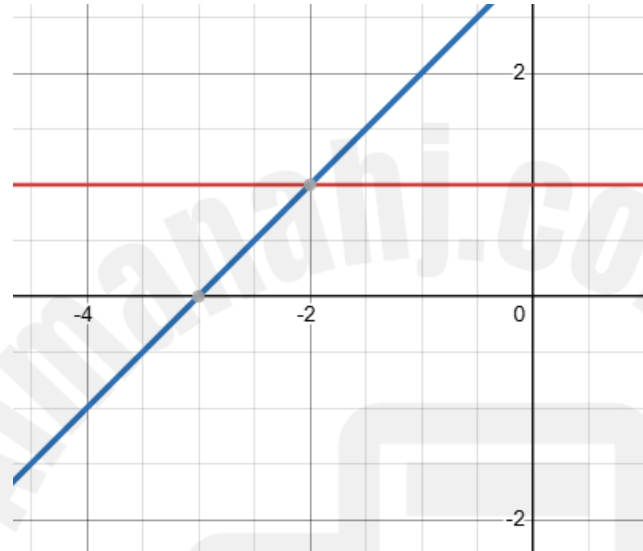
D)



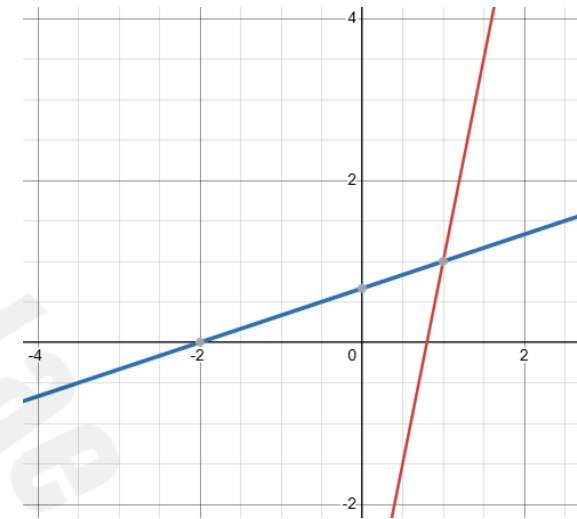
Solve the system of equations by graphing.

11.  $2x - 3y = 0$   
 $4x - 6y = 3$

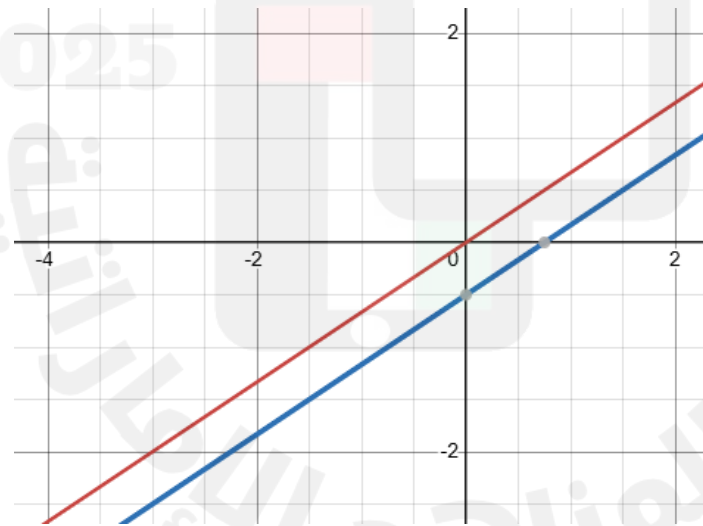
A)



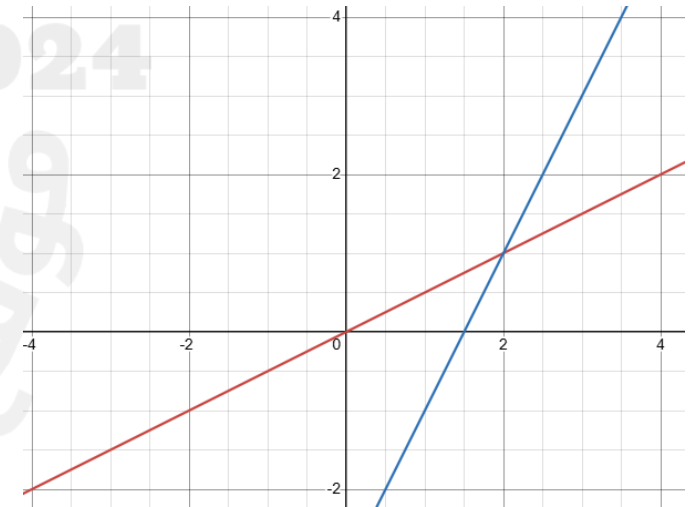
B)



C)



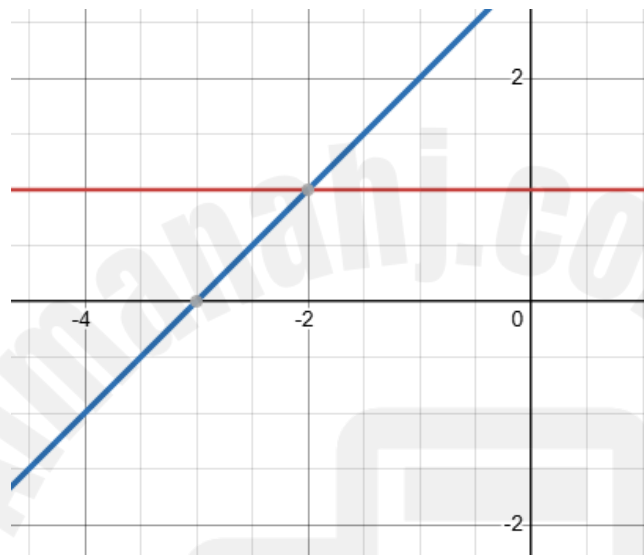
D)



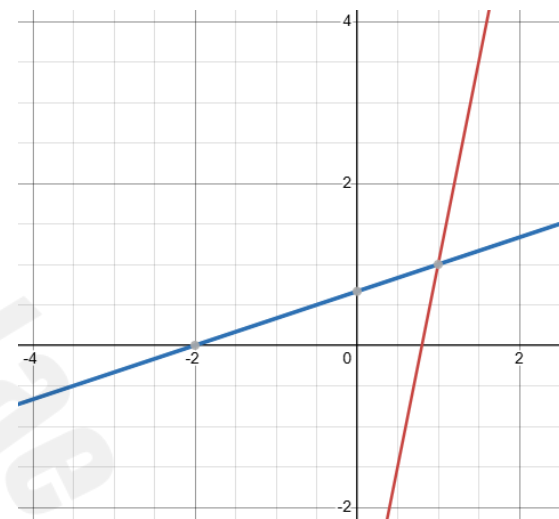
Solve the system of equations by graphing.

12.  $5x - y = 4$   
 $-2x + 6y = 4$

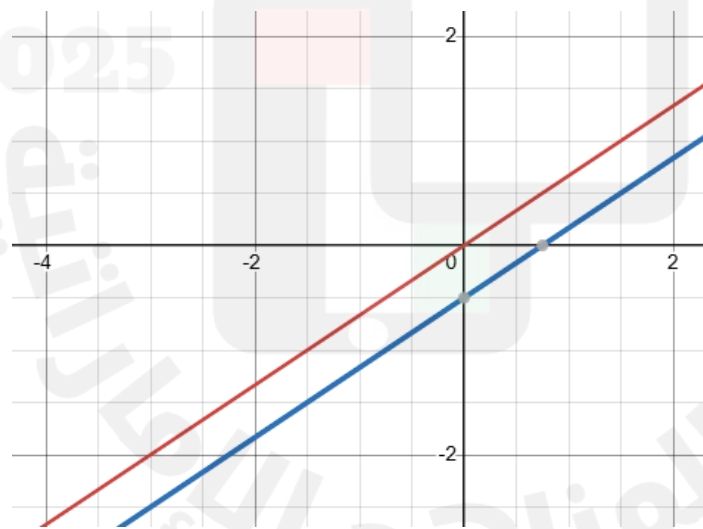
A)



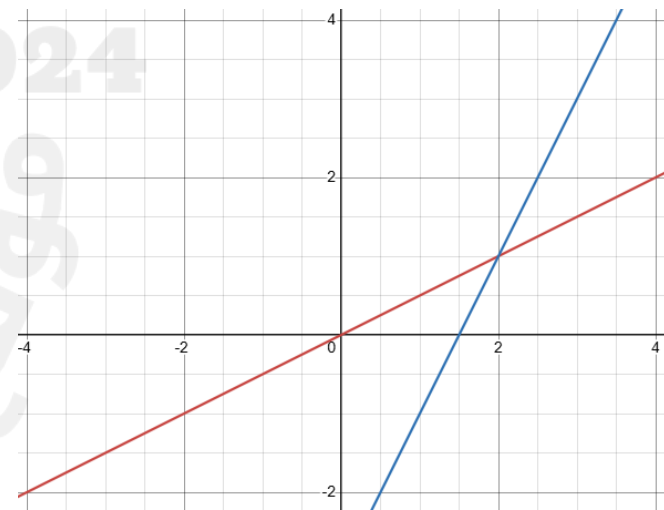
B)



C)



D)





Use substitution to solve each system of equations.

1.  $2x - y = 9$   
 $x + 3y = -6$

- A)  $(3, -3)$
- B)  $(-1, 10)$
- C) No solution
- D)  $(2, 1)$

2.  $2x - y = 7$   
 $6x - 3y = 14$

- A)  $(3, -3)$
- B)  $(-1, 10)$
- C) No solution
- D)  $(2, 1)$

3.  $2x + y = 5$   
 $3x - 3y = 3$

- A)  $(3, -3)$
- B)  $(-1, 10)$
- C) No solution
- D)  $(2, 1)$

4.  $3x + y = 7$   
 $4x + 2y = 16$

- A)  $(3, -3)$
- B)  $(-1, 10)$
- C) No solution
- D)  $(2, 1)$

5.  $4x - y = 6$   
 $2x - \frac{y}{2} = 4$

- A)  $(3, -3)$
- B)  $(-1, 10)$
- C) No solution
- D)  $(2, 1)$

6.  $2x + y = 8$   
 $3x + \frac{3}{2}y = 12$

- A)  $(3, -3)$
- B)  $(-1, 10)$
- C) No solution
- D) Infinitely many solutions

Use elimination to solve each system of equations.

9.  $3x - 2y = 4$   
 $5x + 3y = -25$

- A) (2, 1)
- B) (-2, -5)
- C) No solution
- D) (2, 1)

10.  $5x + 2y = 12$   
 $-6x - 2y = -14$

- A) (2, 1)
- B) (-2, -5)
- C) No solution
- D) (2, 1)

11.  $7x + 2y = -1$   
 $21x + 6y = -9$

- A) (2, 1)
- B) (-2, -5)
- C) No solution
- D) (2, 1)

12.  $3x - 5y = -9$   
 $-7x + 3y = 8$

- A) (-0.5, 1.5)
- B) (2, -1)
- C) Infinitely many solutions
- D) (3, 5)

13.  $x - 3y = -12$   
 $2x + y = 11$

- A) (-0.5, 1.5)
- B) (2, -1)
- C) Infinitely many solutions
- D) (3, 5)

14.  $6w - 8z = 16$   
 $3w - 4z = 8$

- A) (-0.5, 1.5)
- B) (2, -1)
- C) Infinitely many solutions
- D) (3, 5)

**Solve each problem.**

**7. BAKE SALE** Cassandra and Alberto are selling pies for a fundraiser. Cassandra sold 3 small pies and 14 large pies for a total of \$203. Alberto sold 11 small pies and 11 large pies for a total of \$220. Determine the cost of each pie.  $s x = 7, y = 13$ .

a. Write a system of equations and solve by using substitution.

A)  $x = 7, y = 13$       B)  $x = 2, y = 13$

C)  $x = -7, y = 12$       D)  $x = 7, -12$

b. What does the solution represent in terms of this situation?

A) small pie: 4\$, large pie = 7\$      B) small pie: 13\$, large pie = 7\$

C) small pie: 7\$, large pie = 13\$      D) small pie: 7\$, large pie = 12\$

c. How can you verify that the solution is correct?

**8. STOCKS** Ms. Patel invested a total of \$825 in two stocks. At the time of her investment, one share of Stock A was valued at \$12.41 and a share of Stock B was valued at \$8.62. She purchased a total of 79 shares.

**a.** Write a system of equations and solve by substitution.

A)  $a = 38, b = 41$

B)  $a = 28, b = 14$

C)  $a = 83, b = 14$

D)  $a = 35, b = 41$

**b.** How many shares of each stock did Ms. Patel buy? How much did she invest in each of the two stocks?

A) 39 shares for 371.58\$ and 11 shares for 253.42\$

B) 38 shares for 471.58\$ and 41 shares for 353.42\$

C) 28 shares for 471.58\$ and 51 shares for 253.42\$

D) 38 shares for 171.58\$ and 41 shares for 353.42\$

Solve each system of equations.

1.  $2x + 3y - z = 0$

$$x - 2y - 4z = 14$$

$$3x + y - 8z = 17$$

A) Infinitely many solutions

B)  $(2, -5, 0.5)$

C)  $(4, -3, -1)$

D)  $\left(\frac{2}{3}, 2, -5\right)$

2.  $2p - q + 4r = 11$

$$p + 2q - 6r = -11$$

$$3p - 2q - 10r = 11$$

A) Infinitely many solutions

B)  $(2, -5, 0.5)$

C)  $(4, -3, -1)$

D)  $\left(\frac{2}{3}, 2, -5\right)$

3.  $a - 2b + c = 8$

$$2a + b - c = 0$$

$$3a - 6b + 3c = 24$$

A) Infinitely many solutions

B)  $(2, -5, 0.5)$

C)  $(4, -3, -1)$

D)  $\left(\frac{2}{3}, 2, -5\right)$

Solve each system of equations.

4.  $3s - t - u = 5$

$$3s + 2t - u = 11$$

$$6s - 3t + 2u = -12$$

A) Infinitely many solutions

B) No Solution

C)  $(4, -3, -1)$

D)  $\left(\frac{2}{3}, 2, -5\right)$

5.  $2x - 4y - z = 10$

$$4x - 8y - 2z = 16$$

$$3x + y + z = 12$$

A) Infinitely many solutions

B) No Solution

C)  $(4, -3, -1)$

D)  $\left(\frac{2}{3}, 2, -5\right)$

6.  $p - 6q + 4r = 2$

$$2p + 4q - 8r = 16$$

$$p - 2q = 5$$

A) Infinitely many solutions

B) No Solution

C)  $(4, -3, -1)$

D)  $\left(\frac{2}{3}, 2, -5\right)$



Solve each system of equations.

7.  $2a + c = -10$

$$b - c = 15$$

$$a - 2b + c = -5$$

A) Infinitely many solutions

B)  $(-3, 2, 1)$

C)  $(5, -5, -20)$

D)  $(0, 2, 1)$

8.  $x + y + z = 3$

$$13x + 2z = 2$$

$$-x - 5z = -5$$

A) Infinitely many solutions

B)  $(-3, 2, 1)$

C)  $(5, -5, -20)$

D)  $(0, 2, 1)$

9.  $2m + 5n + 2p = 6$

$$5m - 7n = -29$$

$$p = 1$$

A) Infinitely many solutions

B)  $(-3, 2, 1)$

C)  $(5, -5, -20)$

D)  $(0, 2, 1)$

Solve each system of equations.

10.  $f + 4g - h = 1$

$$3f - g + 8h = 0$$

$$f + 4g - h = 10$$

A) No solutions

B)  $(-2, 1, 3)$

C)  $(2, -1, 3)$

D)  $(0, -2, -1)$

11.  $-2c = -6$

$$2a + 3b - c = -2$$

$$a + 2b + 3c = 9$$

A) No solutions

B)  $(-2, 1, 3)$

C)  $(2, -1, 3)$

D)  $(0, -2, -1)$

12.  $3x - 2y + 2z = -2$

$$x + 6y - 2z = -2$$

$$x + 2y = 0$$

A) No solutions

B)  $(-2, 1, 3)$

C)  $(2, -1, 3)$

D)  $(0, -2, -1)$

- 13. ANIMAL NUTRITION** A veterinarian wants to make a food mix for guinea pigs that contains 23 grams of protein, 6.2 grams of fat, and 16 grams of moisture. The composition of three available mixtures are shown in the table. How many grams of each mix should be used to make the desired new mix?

	Protein (g)	Fat (g)	Moisture (g)
Mix A	0.2	0.02	0.15
Mix B	0.1	0.06	0.10
Mix C	0.15	0.05	0.05

- A) (60,50,40)      B) (-2, 1, 3)      C) (2, -1, 3)      D)  $\left(\frac{1}{2}, \frac{3}{4}, \frac{3}{2}\right)$

- 14. ENTERTAINMENT** At the arcade, Marcos, Sara, and Darius played video racing games, pinball, and air hockey. Marcos spent \$6 for 6 racing games, 2 pinball games, and 1 game of air hockey. Sara spent \$12 for 3 racing games, 4 pinball games, and 5 games of air hockey. Darius spent \$12.25 for 2 racing games, 7 pinball games, and 4 games of air hockey. How much did each of the games cost?

- A) (60,50,40)      B) (-2, 1, 3)      C) (2, -1, 3)      D)  $\left(\frac{1}{2}, \frac{3}{4}, \frac{3}{2}\right)$

**15. FOOD** A natural food store makes its own brand of trail mix from dried apples, raisins, and peanuts. A one-pound bag of the trail mix costs \$3.18. It contains twice as much peanuts by weight as apples. If a pound of dried apples costs \$4.48, a pound of raisins is \$2.40, and a pound of peanuts is \$3.44, how many ounces of each ingredient are contained in 1 pound of the trail mix?

A) Dried apples: 7 ounces; Raisins: 3 ounces; Peanuts: 6 ounces.

B) Dried apples: 3 ounces; Raisins: 7 ounces; Peanuts: 6 ounces.

C) Dried apples: 3 ounces; Raisins: 6 ounces; Peanuts: 7 ounces.

D) Dried apples: 6 ounces; Raisins: 7 ounces; Peanuts: 2 ounces.

Determine the average rate of change of  $f(x)$  over the specified interval.

$$\frac{f(b) - f(a)}{b - a}$$

13.  $f(x) = x^2 - 10x + 5$ ; interval  $[-4, 4]$

- A)  $-3$                   B)  $1$   
C)  $-10$                 D)  $4$

14.  $f(x) = 2x^2 + 4x - 6$ ; interval  $[-3, 3]$

- A)  $-3$                   B)  $1$   
C)  $-10$                 D)  $4$

15.  $f(x) = 3x^2 - 3x + 1$ ; interval  $[-5, 5]$

- A)  $-3$                   B)  $1$   
C)  $-10$                 D)  $4$

16.  $f(x) = 4x^2 + x + 3$ ; interval  $[-2, 2]$

- A)  $-3$                   B)  $1$   
C)  $-10$                 D)  $4$

17.  $f(x) = 2x^2 - 11$ ; interval  $[-3, 3]$

- A)  $8$                     B)  $-11$   
C)  $20$                   D)  $0$

18.  $f(x) = -2x^2 + 8x + 7$ ; interval  $[-4, 4]$

- A)  $8$                     B)  $-11$   
C)  $20$                   D)  $0$

Determine the average rate of change of  $f(x)$  over the specified interval.

$$\frac{f(b) - f(a)}{b - a}$$

19. interval  $[-3, 3]$

$x$	$f(x)$
-3	0
-2	-3
-1	-4
0	-3
1	0
2	5
3	12

- A) 0                      B) 2  
C) -2                     D) 3

20. interval  $[-4, 4]$

$x$	$f(x)$
-4	-27
-2	-3
0	5
2	-3
4	-27

- A) 0                      B) 2  
C) -2                     D) 3

21. interval  $[-2, 2]$

$x$	$f(x)$
-2	-3
-1	-3
0	-1
1	3
2	9

- A) 0                      B) 2  
C) -2                     D) 3



Determine the average rate of change of  $f(x)$  over the specified interval.

$$\frac{f(b) - f(a)}{b - a}$$

22. interval  $[-5, 5]$

$x$	$f(x)$
-5	-39
-3	-15
-1	1
0	6
1	9
3	9
5	1

- A) 0                      B) 2  
C) -4                     D) 4

23. interval  $[-3, 3]$

$x$	$f(x)$
-3	27
-2	12
-1	3
0	0
1	3
2	12
3	27

- A) 0                      B) 2  
C) -4                     D) 4

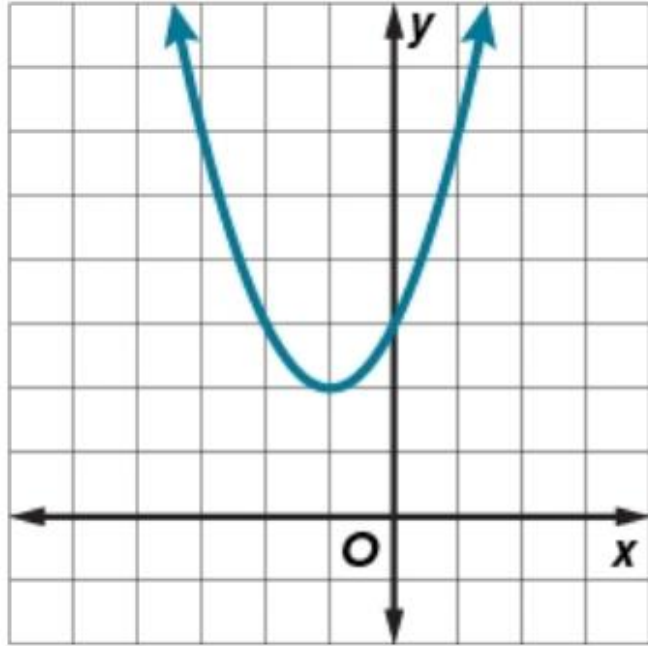
24. interval  $[-2, 2]$

$x$	$f(x)$
-2	12
-1	5
0	0
1	-3
2	-4

- A) 0                      B) 2  
C) -4                     D) 4

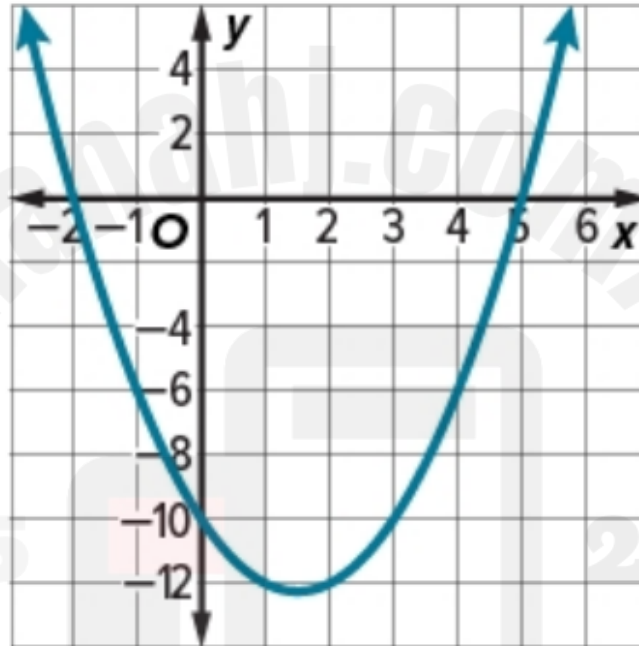
Use the related graph of each equation to determine its solutions.

1.  $x^2 + 2x + 3 = 0$



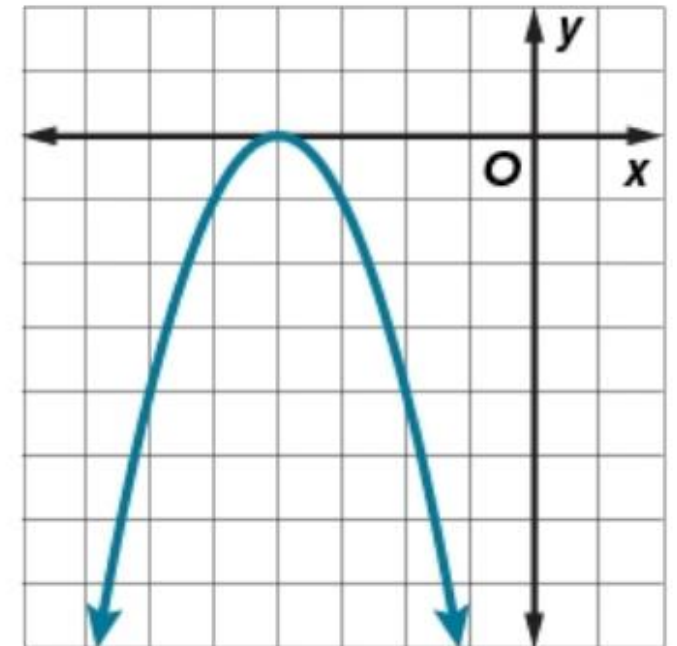
- A) No real solutions
- B)  $-4$
- C)  $-2, 5$
- D)  $4$

2.  $x^2 - 3x - 10 = 0$



- A) No real solutions
- B)  $-4$
- C)  $-2, 5$
- D)  $4$

3.  $-x^2 - 8x - 16 = 0$



- A) No real solutions
- B)  $-4$
- C)  $-2, 5$
- D)  $4$

Solve each equation by graphing.

4.  $x^2 - 10x + 21 = 0$

- A) 3, 7      B) - 0.5  
C) 2, 5      D) 2, -3

5.  $4x^2 + 4x + 1 = 0$

- A) 3, 7      B) - 0.5  
C) 2, 5      D) 2, -3

6.  $x^2 + x - 6 = 0$

- A) 3, 7      B) - 0.5  
C) 2, 5      D) 2, -3

7.  $x^2 + 2x - 3 = 0$

- A) 1, 5      B) - 3, 1  
C) 2, 4      D) - 3

8.  $-x^2 - 6x - 9 = 0$

- A) 1, 5      B) - 3, 1  
C) 2, 4      D) - 3

9.  $x^2 - 6x + 5 = 0$

- A) 1, 5      B) - 3, 1  
C) 2, 4      D) - 3

10.  $x^2 + 2x + 3 = 0$

- A) - 2, 5      B) - 4  
C) No real solutions      D) 1, 3

11.  $x^2 - 3x - 10 = 0$

- A) - 2, 5      B) - 4  
C) No real solutions      D) 1, 3

12.  $-x^2 - 8x - 16 = 0$

- A) - 2, 5      B) - 4  
C) No real solutions      D) 1, 3

Solve each equation by graphing. If the exact roots cannot be found, state the consecutive integers between which the roots are located.

15.  $x^2 - 4x + 2 = 0$

- A) Between 0 and 1; between 3 and 4
- B) Between  $-1$  and  $0$ ; between  $-4$  and  $-3$
- C) Between  $-2$  and  $-1$ ; between  $-5$  and  $-4$
- D)  $0, -4$

16.  $x^2 + 6x + 6 = 0$

- A) Between 0 and 1; between 3 and 4
- B) Between  $-1$  and  $0$ ; between  $-4$  and  $-3$
- C) Between  $-2$  and  $-1$ ; between  $-5$  and  $-4$
- D)  $0, -4$

Solve each equation by graphing. If the exact roots cannot be found, state the consecutive integers between which the roots are located.

17.  $x^2 + 4x + 2 = 0$

- A) Between 0 and 1; between 3 and 4
- B) Between  $-1$  and  $0$ ; between  $-4$  and  $-3$
- C) Between  $-2$  and  $-1$ ; between  $-5$  and  $-4$
- D)  $0, -4$

18.  $-x^2 - 4x = 0$

- A) Between 0 and 1; between 3 and 4
- B) Between  $-1$  and  $0$ ; between  $-4$  and  $-3$
- C) Between  $-2$  and  $-1$ ; between  $-5$  and  $-4$
- D)  $0, -4$

Solve each equation by graphing. If the exact roots cannot be found, state the consecutive integers between which the roots are located.

19.  $-x^2 + 36 = 0$

- A) Between 0 and 1; between 5 and 6
- B) Between  $-1$  and  $0$ ; between  $-5$  and  $-4$
- C)  $-6, 6$
- D) Between  $-3$  and  $-2$ ; between 2 and 3

20.  $x^2 - 6x + 4 = 0$

- A) Between 0 and 1; between 5 and 6
- B) Between  $-1$  and  $0$ ; between  $-5$  and  $-4$
- C)  $-6, 6$
- D) Between  $-3$  and  $-2$ ; between 2 and 3



Solve each equation by graphing. If the exact roots cannot be found, state the consecutive integers between which the roots are located.

21.  $x^2 + 5x + 3 = 0$

- A) Between 0 and 1; between 5 and 6
- B) Between  $-1$  and  $0$ ; between  $-5$  and  $-4$
- C)  $-6, 6$
- D) Between  $-3$  and  $-2$ ; between 2 and 3

22.  $x^2 - 7 = 0$

- A) Between 0 and 1; between 5 and 6
- B) Between  $-1$  and  $0$ ; between  $-5$  and  $-4$
- C)  $-6, 6$
- D) Between  $-3$  and  $-2$ ; between 2 and 3

23.  $-x^2 - 4x - 6 = 0$

- A)  $0, -2$
- B) *No real solution*
- C)  $-5, 1$
- D)  $2$

**13.** Use a quadratic equation to find two real numbers with a sum of 2 and a product of  $-24$ .

- A)  $6, -4$                       B)  $0, 1$   
C)  $-3, 15$                       D)  $3, -18$

**14.** Use a quadratic equation to find two real numbers with a sum of  $-15$  and a product of  $-54$ .

- A)  $6, -4$                       B)  $0, 1$   
C)  $-3, 15$                       D)  $3, -18$

Find the values of  $x$  and  $y$  that make each equation true.

19.  $9 + 12i = 3x + 4yi$

A)  $x = 3; y = 3$

B)  $x = -\frac{11}{2}; y = -3$

C)  $x = 1; y = -2$

D)  $x = 2; y = -3$

20.  $x + 1 + 2yi = 3 - 6i$

A)  $x = 3; y = 3$

B)  $x = -\frac{11}{2}; y = -3$

C)  $x = 1; y = -2$

D)  $x = 2; y = -3$

21.  $2x + 7 + (3 - y)i = -4 + 6i$

A)  $x = 3; y = 3$

B)  $x = -\frac{11}{2}; y = -3$

C)  $x = 1; y = -2$

D)  $x = 2; y = -3$

22.  $5 + y + (3x - 7)i = 9 - 3i$

A)  $x = 3; y = 8$

B)  $x = \frac{4}{3}; y = 4$

C)  $x = 4; y = -3$

D)  $x = 2; y = -3$

23.  $20 - 12i = 5x + (4y)i$

A)  $x = 3; y = 8$

B)  $x = \frac{4}{3}; y = 4$

C)  $x = 4; y = -3$

D)  $x = 2; y = -3$

24.  $x - 16i = 3 - (2y)i$

A)  $x = 3; y = 8$

B)  $x = \frac{4}{3}; y = 4$

C)  $x = 4; y = -3$

D)  $x = 2; y = -3$

**Simplify.**

**25.**  $(6 + i) + (4 - 5i)$

- A)  $2 + 5i$       B)  $1 + 4i$   
C)  $10 - 4i$       D)  $2 + i$

**26.**  $(8 + 3i) - (6 - 2i)$

- A)  $2 + 5i$       B)  $1 + 4i$   
C)  $10 - 4i$       D)  $2 + i$

**27.**  $(5 - i) - (3 - 2i)$

- A)  $2 + 5i$       B)  $1 + 4i$   
C)  $10 - 4i$       D)  $2 + i$

**28.**  $(-4 + 2i) + (6 - 3i)$

- A)  $-12 + 9i$       B)  $2 - i$   
C)  $1 - 4i$       D)  $10 - 5i$

**29.**  $(6 - 3i) + (4 - 2i)$

- A)  $-12 + 9i$       B)  $2 - i$   
C)  $1 - 4i$       D)  $10 - 5i$

**30.**  $(-11 + 4i) - (1 - 5i)$

- A)  $-12 + 9i$       B)  $2 - i$   
C)  $1 - 4i$       D)  $10 - 5i$

**31.**  $(2 + i)(3 - i)$

- A)  $18 - 13i$       B)  $-10i$   
C)  $7 + i$       D)  $2 + i$

**32.**  $(5 - 2i)(4 - i)$

- A)  $18 - 13i$       B)  $-10i$   
C)  $7 + i$       D)  $2 + i$

**33.**  $(4 - 2i)(1 - 2i)$

- A)  $18 - 13i$       B)  $-10i$   
C)  $7 + i$       D)  $2 + i$

**34. ELECTRICITY** Using the formula  $V = CI$ , find the voltage  $V$  in a circuit when the current  $C = 3 - j$  amps and the impedance  $I = 3 + 2j$  ohms.

A)  $\frac{3}{2} - \frac{1}{2}i$

B)  $-\frac{5}{3} - 2i$

C)  $11 + 3i$

D)  $-\frac{13}{2} - \frac{7}{2}i$

**Simplify.**

**35.**  $\frac{5}{3+i}$

A)  $\frac{3}{2} - \frac{1}{2}i$

B)  $-\frac{5}{3} - 2i$

C)  $11 + 3i$

D)  $-\frac{13}{2} - \frac{7}{2}i$

**36.**  $\frac{7-13i}{2i}$

A)  $\frac{3}{2} - \frac{1}{2}i$

B)  $-\frac{5}{3} - 2i$

C)  $11 + 3i$

D)  $-\frac{13}{2} - \frac{7}{2}i$

**37.**  $\frac{6-5i}{3i}$

A)  $\frac{3}{2} - \frac{1}{2}i$

B)  $-\frac{5}{3} - 2i$

C)  $11 + 3i$

D)  $-\frac{13}{2} - \frac{7}{2}i$

Solve each equation by factoring. Check your solution.

15.  $x^2 = 64$

A)  $-10, 10$       B)  $-1, 1$

C)  $-17, 17$       D)  $-8, 8$

16.  $x^2 - 100 = 0$

A)  $-10, 10$       B)  $-1, 1$

C)  $-17, 17$       D)  $-8, 8$

17.  $289 = x^2$

A)  $-10, 10$       B)  $-1, 1$

C)  $-17, 17$       D)  $-8, 8$

18.  $x^2 + 14 = 50$

A)  $-6, 6$       B)  $-13, 13$

C)  $-11, 11$       D)  $-2, 2$

19.  $x^2 - 169 = 0$

A)  $-6, 6$       B)  $-13, 13$

C)  $-11, 11$       D)  $-2, 2$

20.  $124 = x^2 + 3$

A)  $-6, 6$       B)  $-13, 13$

C)  $-11, 11$       D)  $-2, 2$

21.  $4x^2 - 28x + 49 = 0$

A)  $\frac{1}{2}$       B)  $-\frac{1}{3}$

C)  $\frac{7}{2}$       D)  $\frac{3}{4}$

22.  $9x^2 + 6x = -1$

A)  $\frac{1}{2}$       B)  $-\frac{1}{3}$

C)  $\frac{7}{2}$       D)  $\frac{3}{4}$

23.  $16x^2 - 24x + 13 = 4$

A)  $\frac{1}{2}$       B)  $-\frac{1}{3}$

C)  $\frac{7}{2}$       D)  $\frac{3}{4}$



Solve each equation by factoring. Check your solution.

24.  $81x^2 + 36x = -4$

- A)  $-\frac{2}{9}$       B)  $-\frac{10}{3}$   
 C)  $-\frac{8}{5}$       D)  $\frac{3}{4}$

25.  $25x^2 + 80x + 64 = 0$

- A)  $-\frac{2}{9}$       B)  $-\frac{10}{3}$   
 C)  $-\frac{8}{5}$       D)  $\frac{3}{4}$

26.  $9x^2 + 60x + 95 = -5$

- A)  $-\frac{2}{9}$       B)  $-\frac{10}{3}$   
 C)  $-\frac{8}{5}$       D)  $\frac{3}{4}$

27.  $x^2 + 12 = -13$

- A)  $15i, -15i$       B)  $i, -i$   
 C)  $10i, -10i$       D)  $5i, -5i$

28.  $x^2 + 100 = 0$

- A)  $15i, -15i$       B)  $i, -i$   
 C)  $10i, -10i$       D)  $5i, -5i$

29.  $x^2 = -225$

- A)  $15i, -15i$       B)  $i, -i$   
 C)  $10i, -10i$       D)  $5i, -5i$

30.  $x^2 + 4 = 0$

- A)  $\frac{7}{8}i, -\frac{7}{8}i$       B)  $2i, -2i$   
 C)  $\frac{5}{6}i, -\frac{5}{6}i$       D)  $5i, -5i$

31.  $36x^2 = -25$

- A)  $\frac{7}{8}i, -\frac{7}{8}i$       B)  $2i, -2i$   
 C)  $\frac{5}{6}i, -\frac{5}{6}i$       D)  $5i, -5i$

32.  $64x^2 = -49$

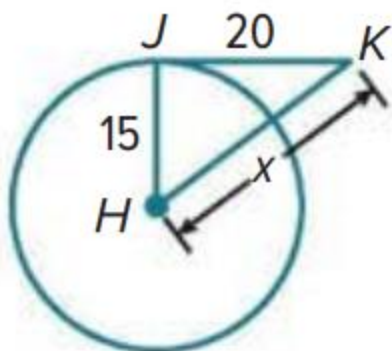
- A)  $\frac{7}{8}i, -\frac{7}{8}i$       B)  $2i, -2i$   
 C)  $\frac{5}{6}i, -\frac{5}{6}i$       D)  $5i, -5i$

# FRQ (5-10 marks)

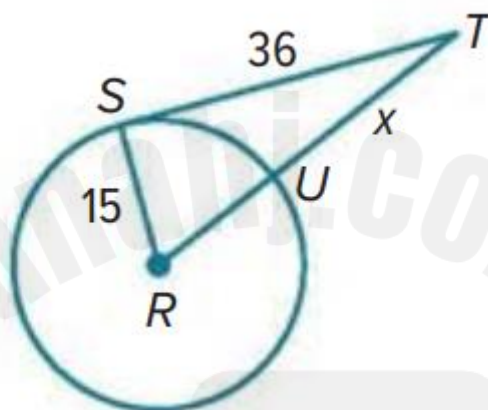
16	Use properties of tangents	9-14	259
		15-16	260
17	Probability and the Addition Rule	19-24	411
	Conditional Probability	1-10	415
18	Probability with Permutations and Combinations	1-7	393
19	Solving Absolute Value Equations and Inequalities by Graphing	1-6	563
20	Using the Quadratic Formula and the Discriminant	24-35	48

Find the value of  $x$ . Assume that segments that appear to be tangent are tangent. Round your answer to the nearest hundredth, if needed.

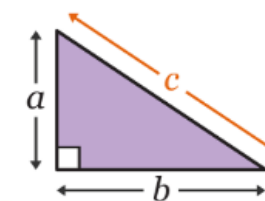
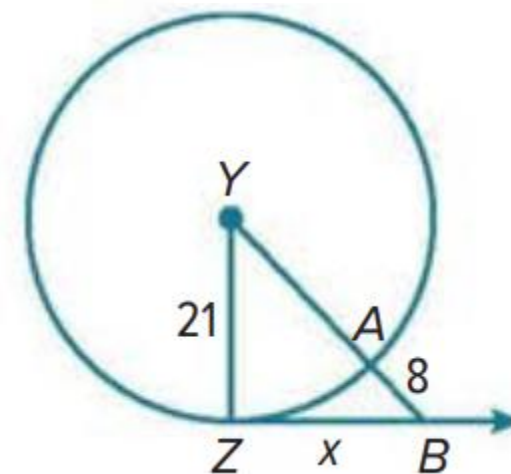
9.



10.



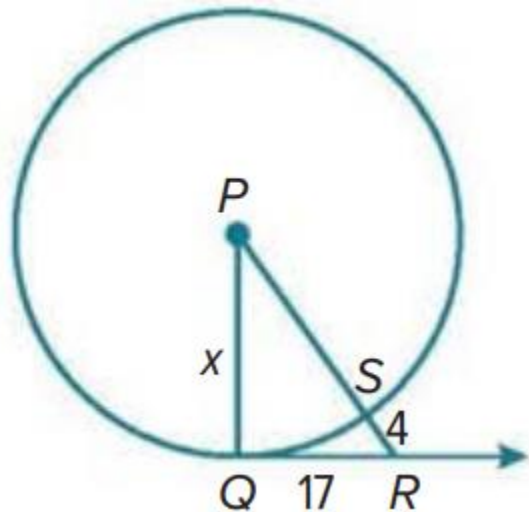
11.



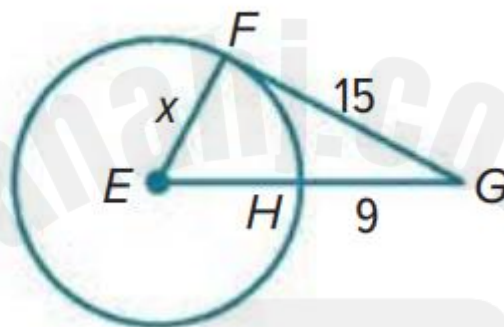
$$a^2 + b^2 = c^2$$

Find the value of  $x$ . Assume that segments that appear to be tangent are tangent. Round your answer to the nearest hundredth, if needed.

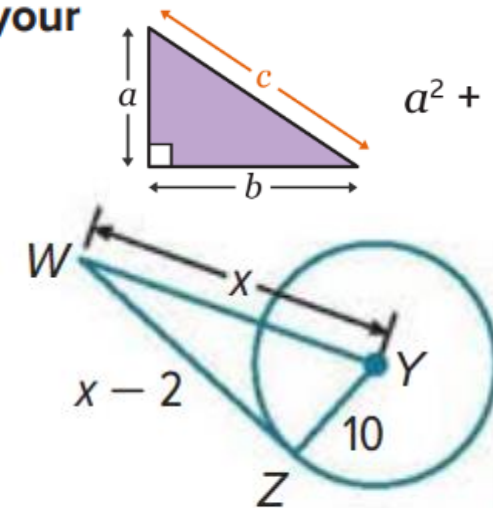
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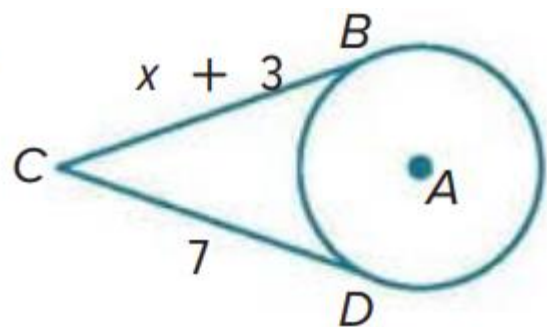


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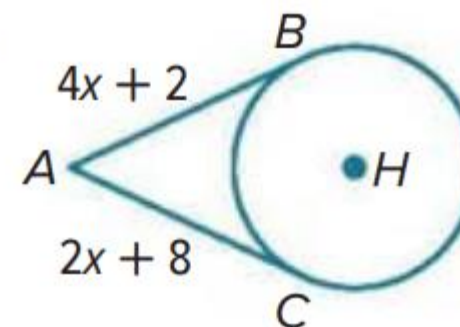


Find the value of  $x$ . Assume that segments that appear to be tangent are tangent.

15.



16.



**19. SCHOLARSHIPS** A review committee read 3000 application essays for one \$5000 college scholarship. Of the applications reviewed, 2865 essays were the required length, 2577 of the applicants had the minimum required grade-point average, and 2486 had the required length and minimum grade-point average. What is the probability that an application essay selected at random will have the required length or the required grade-point average?

$$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$$

**20. PETS** Ruby's cat had 8 kittens. The litter included 2 orange females, 3 mixed-color females, 1 orange male, and 2 mixed-color males. Ruby wants to keep one kitten. What is the probability that she randomly chooses a kitten that is female or orange?



- 21. SPORTS** The table shows the age and number of participants in each sport at a sporting complex. What is the probability that a player is 14 or plays basketball?

$$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$$

Mason Sports Complex			
Age	Soccer	Volleyball	Basketball
14	28	36	42
15	30	26	33
16	35	41	29

**22. USE A MODEL** Vicente and Kelly are designing a board game. They decide that the game will use a pair of dice and the players will have to find the sum of the numbers rolled. Vicente and Kelly created the table shown to help determine probabilities. Each player will roll the pair of dice twice during that player's turn.

a. What is the probability of rolling a pair of two numbers that have a sum of seven?

b. What is the probability of rolling two numbers whose sum is an even number or not rolling a 2? Round to the nearest thousandth.

$$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$$

1, 1	1, 2	1, 3	1, 4	1, 5	1, 6
2, 1	2, 2	2, 3	2, 4	2, 5	2, 6
3, 1	3, 2	3, 3	3, 4	3, 5	3, 6
4, 1	4, 2	4, 3	4, 4	4, 5	4, 6
5, 1	5, 2	5, 3	5, 4	5, 5	5, 6
6, 1	6, 2	6, 3	6, 4	6, 5	6, 6

$$P(A \text{ or } B) = P(A) + P(B)$$

- 23. PARKS** The table shows Parks and Recreation Department classes and the number of participants ages 7–9. What is the probability that a participant chosen at random is in drama or is an 8-year-old?

$$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$$

Age	Swimming	Drama	Art
7	40	35	25
8	30	21	14
9	20	44	11

- 24. FLOWER GARDEN** Erin is planning her summer garden. The table shows the number of bulbs she has according to type and color of flower. If Erin randomly selects one of the bulbs, what is the probability that she selects a bulb for a yellow flower or a dahlia?

Flower	Orange	Yellow	White
Dahlia	5	4	3
Lily	3	1	2
Gladiolus	2	5	6
Iris	0	1	4

1. **CLUBS** The Spanish Club is having a potluck lunch where each student brings in a cultural dish. The 10 students randomly draw cards numbered with consecutive integers from 1 to 10. Students who draw odd numbers will bring main dishes. Students who draw even numbers will bring desserts. If Cynthia is bringing a dessert, what is the probability that she drew the number 10?

$$P(B|A) = \frac{P(A \text{ and } B)}{P(A)}$$

2. A card is randomly drawn from a standard deck of 52 cards. What is the probability that the card is a king of diamonds, given that the card drawn is a king?
3. **GAME** In a game, a spinner with the 7 colors of the rainbow is spun. Find the probability that the color spun is blue, given the color is one of the three primary colors: red, yellow, or blue.

4. Fifteen cards numbered 1–15 are placed in a hat. What is the probability that the card has a multiple of 3 on it, given that the card picked is an odd number?

$$P(B|A) = \frac{P(A \text{ and } B)}{P(A)}$$

5. A blue marble is selected at random from a bag of 3 red and 9 blue marbles and not replaced. What is the probability that a second marble selected will be blue?

6. A die is rolled. If the number rolled is less than 5, what is the probability that it is the number 2?

7. If two dice are rolled, what is the probability that the sum of the faces is 4, given that the first die rolled is odd?

$$P(B|A) = \frac{P(A \text{ and } B)}{P(A)}$$

8. A spinner numbered 1 through 12 is spun. Find the probability that the number spun is an 11 given that the number spun was an odd number.

9. If two dice are rolled, what is the probability that the sum of the faces is 8, given that the first die rolled is even?



**10. PICNIC** A school picnic offers students hamburgers, hot dogs, chips, and a drink.

$$P(B|A) = \frac{P(A \text{ and } B)}{P(A)}$$

**a.** At the picnic, 60% of the students order a hamburger and 48% of the students order a hamburger and chips. What is the conditional probability that a student who orders a hamburger also orders chips?

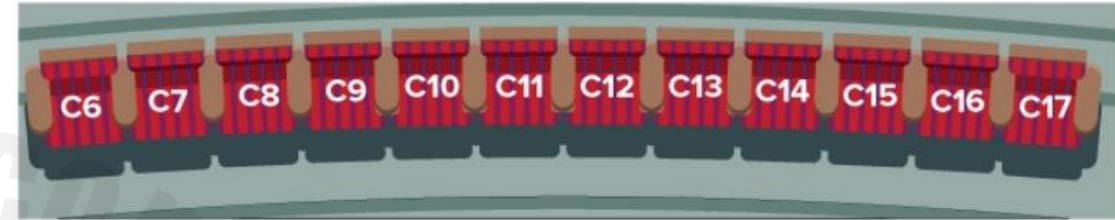
**b.** If 50% of the students ordered chips, are the events of ordering a hamburger and ordering chips independent? Explain.

$$P(A \text{ and } B) = P(A) \cdot P(B)$$

**c.** If 80% of the students who ordered a hot dog also ordered a drink and 35% of all the students ordered a hot dog, find the probability that a student at the picnic orders a hot dog and drink. Explain.

- CHEERLEADING** The cheerleading squad is made up of 12 girls. A captain and a co-captain are selected at random. What is the probability that Chantel and Clover are chosen as leaders?
- BOOKS** You have a textbook for each of the following subjects: Spanish, English, Chemistry, Geometry, History, and Psychology. If you choose 4 of these books at random to arrange on a shelf, what is the probability that the Geometry textbook will be first from the left and the Chemistry textbook will be second from the left?
- RAFFLE** Alfonso and Cordell each bought one raffle ticket at the state fair. If 50 tickets were randomly sold, what is the probability that Alfonso got ticket 14 and Cordell got ticket 23?

4. **CONCERT** Nia and Ciro are going to a concert with their high school's key club. If they choose a seat in the row below at random, what is the probability that Ciro will be in seat C11 and Nia will be in C12?



5. **PHONE NUMBERS** What is the probability that a 7-digit telephone number generated using the digits 2, 3, 2, 5, 2, 7, and 3 is the number 222-3357?
6. **IDENTIFICATION** A store randomly assigns their employees work identification numbers to track productivity. Each number consists of 5 digits ranging from 1–9. If the digits cannot repeat, find the probability that a randomly generated number is 25938.

7. **STUDENT COUNCIL** The table shows the finalists for class president. The order in which they will give their speeches will be chosen randomly.

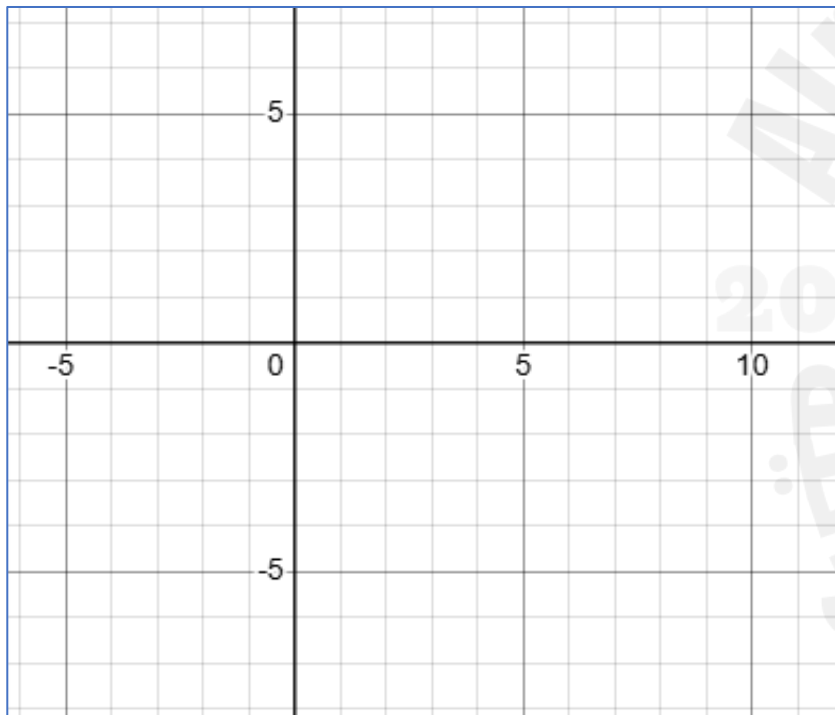
a. What is the probability that Denny, Kelli, and Chaminade are the first 3 speakers, in any order?

b. What is the probability that Denny is first, Kelli is second, and Chaminade is third?

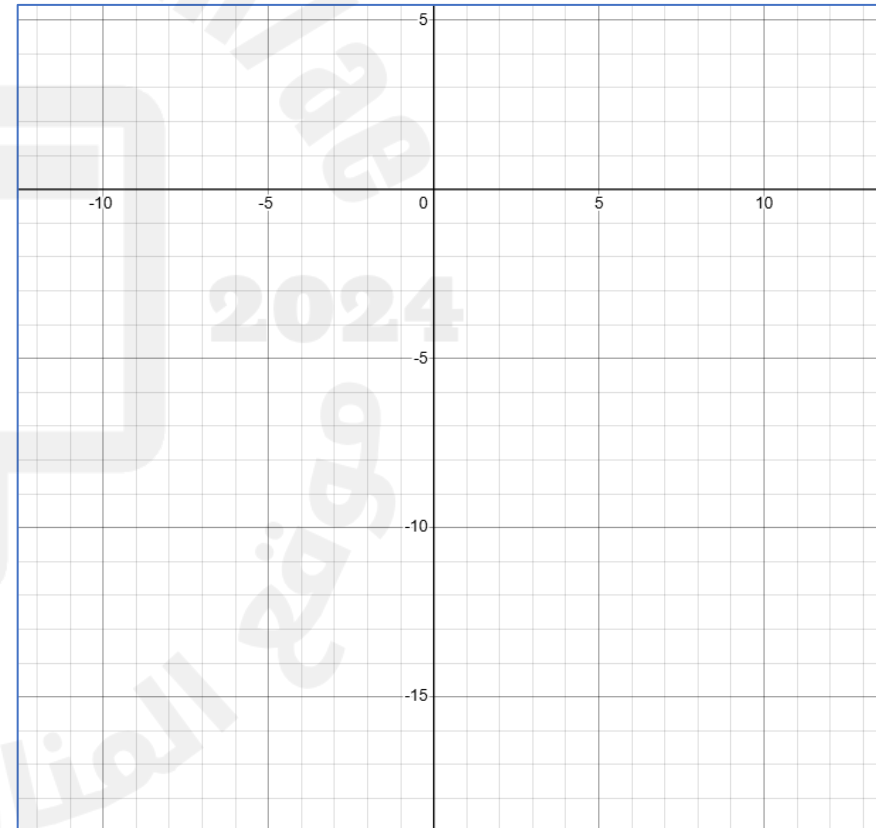
Class President Finalists
Alan Shepherd
Chaminade Hudson
Denny Murano
Kelli Baker
Tanika Johnson
Jerome Murdock
Marlene Lindeman

Solve each equation by graphing.

1.  $|x - 4| = 5$

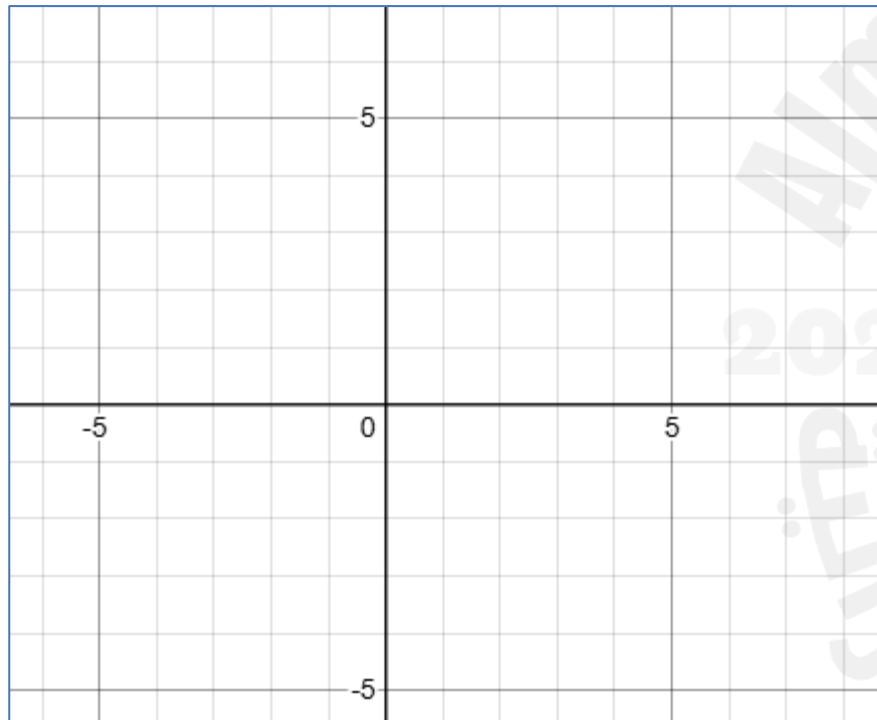


2.  $|2x - 3| = 17$

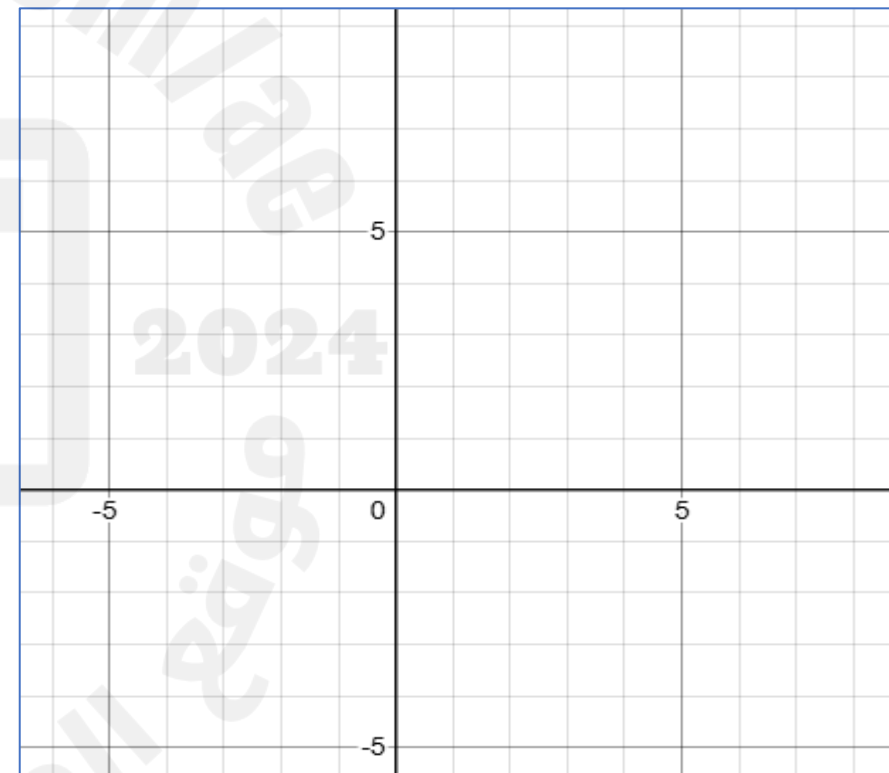


Solve each equation by graphing.

3.  $3 + |2x + 1| = 3$



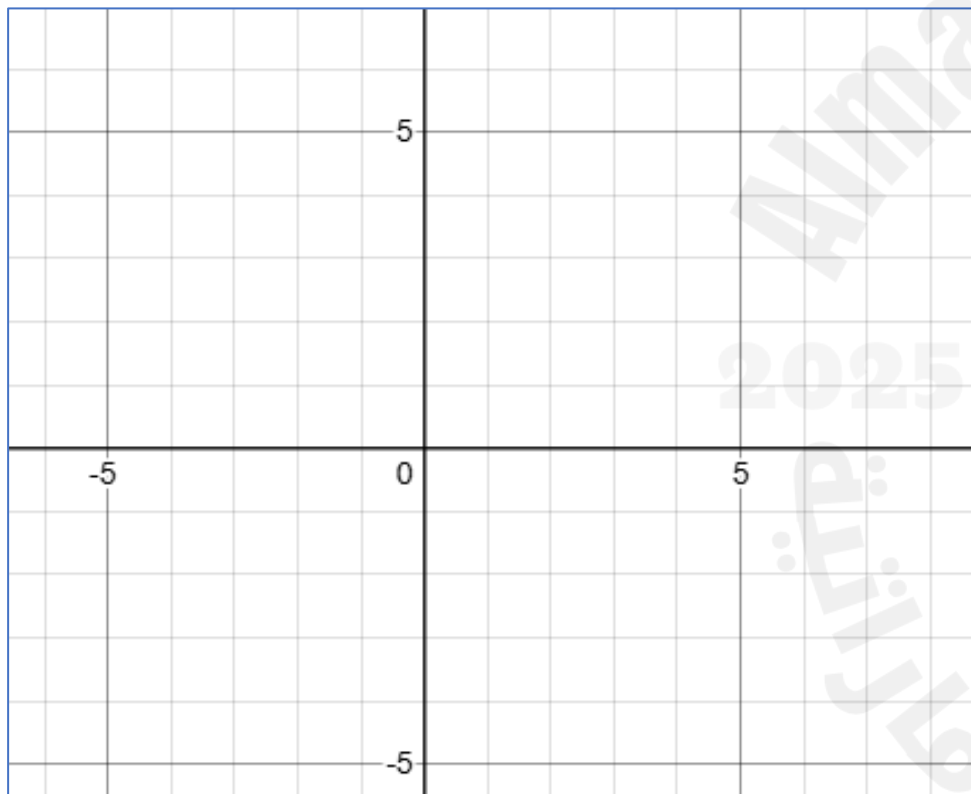
4.  $|x - 1| + 6 = 4$



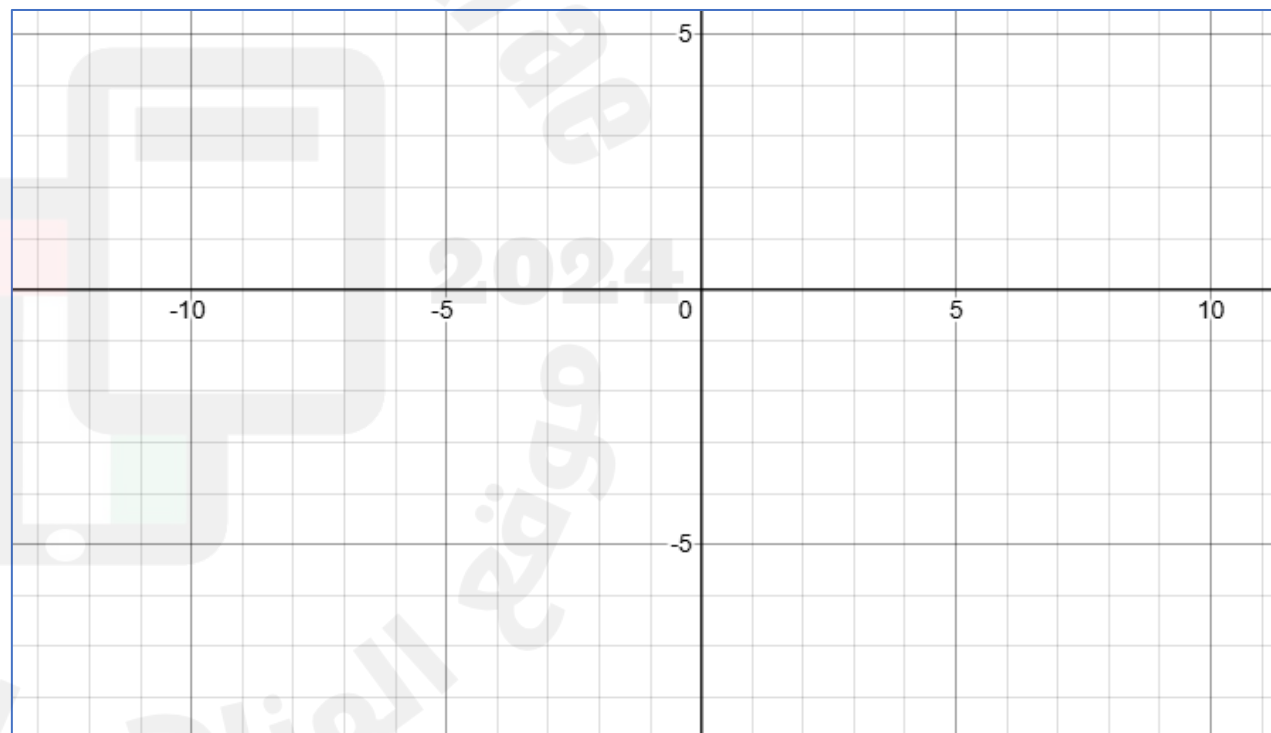


Solve each equation by graphing.

5.  $7 + |3x - 1| = 7$

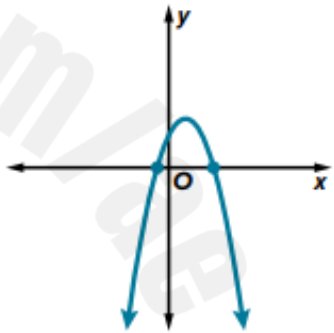
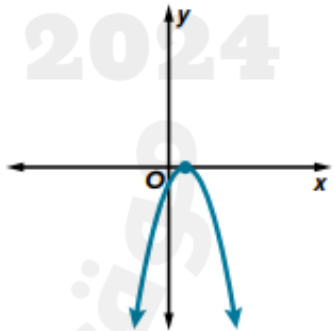
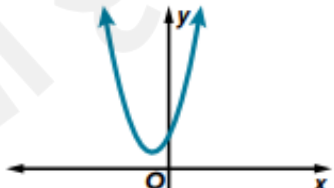


6.  $|x + 2| + 5 = 13$



### Key Concept • Discriminant

Consider  $ax^2 + bx + c = 0$ , where  $a$ ,  $b$ , and  $c$  are rational numbers and  $a \neq 0$ .

Value of Discriminant	Type and Number of Roots	Example of Graph of Related Function
$b^2 - 4ac > 0$ ; $b^2 - 4ac$ is a perfect square.	2 real, rational roots	
$b^2 - 4ac > 0$ ; $b^2 - 4ac$ is not a perfect square.	2 real, irrational roots	
$b^2 - 4ac = 0$	1 real rational root	
$b^2 - 4ac < 0$	2 complex roots	

Find the value of the discriminant for each quadratic equation. Then describe the number and type of roots for the equation.

24.  $x^2 - 8x + 16 = 0$

25.  $x^2 - 11x - 26 = 0$

26.  $3x^2 - 2x = 0$

27.  $20x^2 + 7x - 3 = 0$

28.  $5x^2 - 6 = 0$

29.  $x^2 - 6 = 0$

Find the value of the discriminant for each quadratic equation. Then describe the number and type of roots for the equation.

$$30. x^2 + 8x + 13 = 0$$

$$31. 5x^2 - x - 1 = 0$$

$$32. x^2 - 2x - 17 = 0$$

$$33. x^2 + 49 = 0$$

$$34. x^2 - x + 1 = 0$$

$$35. 2x^2 - 3x = -2$$

اللهم وفقني وافتح علي قلبي ونور بصيرتي ولا تضيع

لي يا الله تعباً وسخري من حيث لا أحتسب عوناً



**بالتوفيق والنجاح إن شاء الله**

