G9 Adv Term 2 (2023-24)
End of Term (EoT) Questions

Academic Year	2023/2024
العام الدراسي	
Term	2
الفصل	
Subject	Mathematics/Reveal
المادة	الرياضيات/ريفيل
Grade	9
الصف	
Stream	Advanced
المسار	المتقدم

PART 1

Number of MCQ عدد الأسئلة الموضوعية	15
Marks of MCQ درجة الأسئلة الموضوعية	4

Use elimination to solve each system of equations.

1. $x + y = 2$
$-3x + 4y = 15$

2. $x - y = -8$
$7x + 5y = 16$

3. $x + 5y = 17$
$-4x + 3y = 24$

4. $6x + y = -39$
$3x + 2y = -15$

5. $2x + 5y = 11$
$4x + 3y = 1$

6. $3x - 3y = -6$
$-5x + 6y = 12$

7. $3x + 4y = 29$
$6x + 5y = 43$

8. $8x + 3y = 4$
$-7x + 5y = -34$

9. $8x + 3y = -7$
$7x + 2y = -3$

10. $4x + 7y = -80$
$3x + 5y = -58$

11. $12x - 3y = -3$
$6x + y = 1$

12. $-4x + 2y = 0$
$10x + 3y = 8$

مدرسة الشوامخ

Find the value of the variable and *YZ* if *Y* is between *X* and *Z*.

10. $XY = 11$, $YZ = 4c$, $XZ = 83$

11. $XY = 6b$, $YZ = 8b$, $XZ = 175$

12. $XY = 7a$, $YZ = 5a$, $XZ = 6a + 24$

13. $XY = 5.5$, $YZ = 2c$, $XZ = 8.9$

14. $XY = 5n$, $YZ = 2n$, $XZ = 91$

15. $XY = 4w$, $YZ = 6w$, $XZ = 12w - 8$

16. $XY = 11d$, $YZ = 9d - 2$, $XZ = 5d + 28$

17. $XY = 4n + 3$, $YZ = 2n - 7$, $XZ = 20$

18. $XY = 3a - 4$, $YZ = 6a + 2$, $XZ = 5a + 22$

19. $XY = 3k - 2$, $YZ = 7k + 4$, $XZ = 4k + 38$

20. $XY = 4x$, $YZ = x$, and $XZ = 25$

21. $XY = 4x$, $YZ = 3x$, and $XZ = 42$

22. $XY = 12$, $YZ = 2x$, and $XZ = 28$

23. $XY = 2x + 1$, $YZ = 6x$, and $XZ = 81$

مدرسة الشوامخ

Graph each system and determine the number of solutions it has. If it has one solution, determine its coordinates.

11. $y = -3$
   $y = x - 3$

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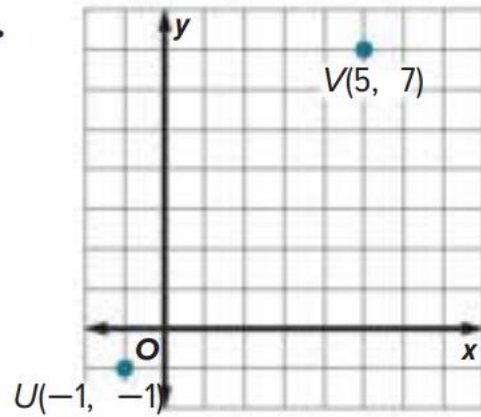 $y = -2x - 4$

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

14. $x + y = 4$
   $3x + 3y = 12$

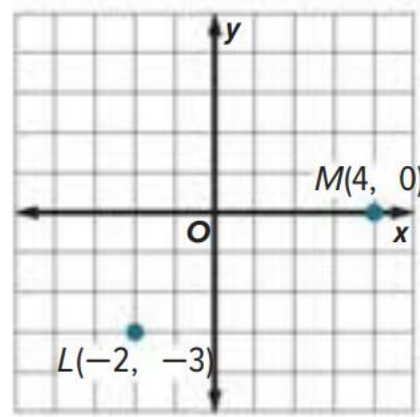**15.** $x - y = -2$
   $-x + y = 2$

16. $2x + 3y = 12$
   $2x - y = 4$

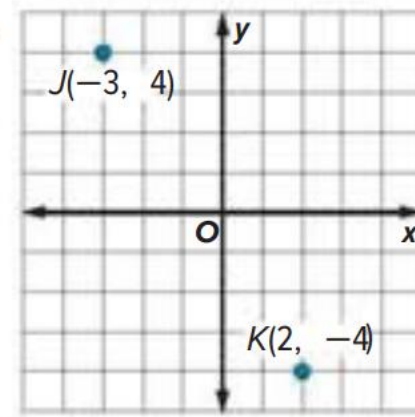## Find the distance between each pair of points.

21.

$V(5, 7)$
O
x
$U(-1, -1)$

22.

$M(4, 0)$
O
x
$L(-2, -3)$

23.

$J(-3, 4)$
O
x
$K(2, -4)$

24. $A(2, 6), N(5, 10)$

25. $R(3, 4), T(7, 2)$

26. $X(-3, 8), Z(-5, 1)$

مدرسة الشوامخ

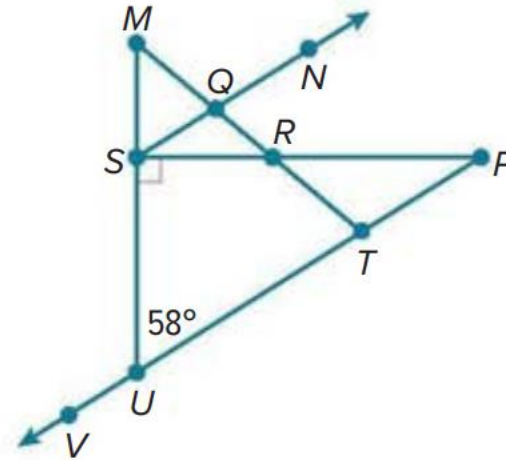| 5	Analyze figures characteristics of adjacent angles, linear pairs of angles, and vertical angles	(12-17)	621, 622

Example 3

Refer to the figure.

12. Name two adjacent angles. **Sample answer: ∠MQN and ∠NQR**

13. Name two vertical angles. **Sample answer: ∠SRQ and ∠TRP**

14. Find m∠SUV. **122°**

58°

Find the value of each variable.

15.

120°

$(2x - 10)°$

16.

$(2x)°$ $(4x + 108)°$

17.

$(2x + 25)°$ $y°$

$(3x - 10)°$

مدرسة الشوامخ
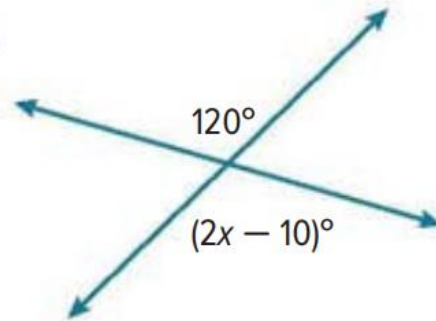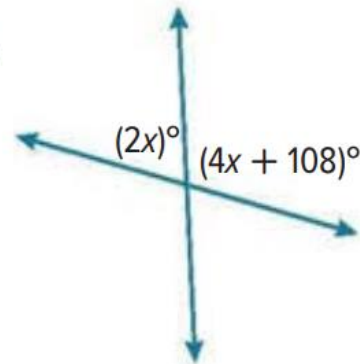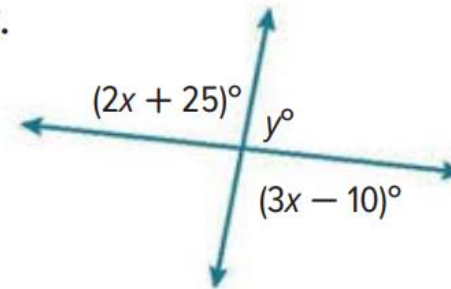
16. GEOLOGY A *tiankeng* is a sinkhole with nearly vertical walls. The Tianpingmiao tiankeng is approximately cylindrical with a diameter of 180 meters and a depth of 420 meters.

a. If the top of the tiankeng is open and plants can grow on the bottom and sides, what is the surface area available for plants? Round to the nearest square meter. **262,951 m²**

b. What is the volume of water that could fill the Tianpingmiao tiankeng? **10,687,698 m³**

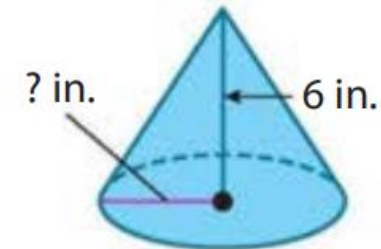**Example 5**

17. The model of a roof is in the shape of a square pyramid, as shown. If the surface area of the model is 64 cm², what is the slant height? **3.9 cm**

? cm

5 cm
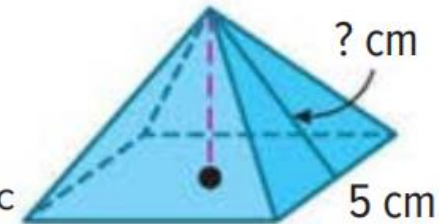
18. A candle is in the shape of a pyramid. The volume of a candle is 27 cubic centimeters and its height is 6 centimeters. Find the area of the base of the candle. **13.5 cm²**

? in. 6 in.

19. A disposable cup is in the shape of a cone, as shown. The cup has a volume of about 48.8 in³. What is the radius of the cup to the nearest inch? **3 in.**

مدرسة الشوامخ

Example 1

Refer to the figure for Exercises 1–7.

1. Name the lines that are only in plane Q.

2. How many planes are labeled in the figure?

3. Name the plane containing the lines m and t.

4. Name the intersection of lines m and t.

5. Name a point that is *not* coplanar with points A, B, and C.

6. Are points F, M, G, and P coplanar? Explain.

7. Does line n intersect line q? Explain.

مدرسة الشوامخ
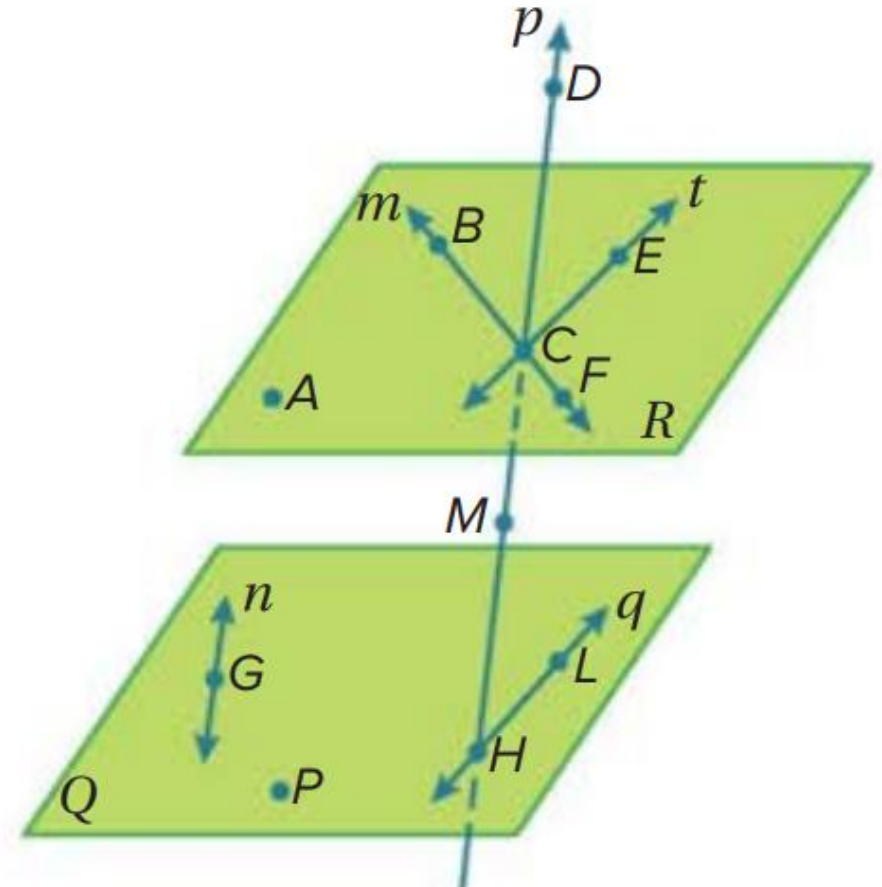
Use substitution to solve each system of equations.

1. $y = 5x + 1$
    $4x + y = 10$

2. $y = 4x + 5$
    $2x + y = 17$

3. $y = 3x - 34$
    $y = 2x - 5$

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

5. $2x + y = 3$
    $4x + 4y = 8$

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

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

8. $-1 = 2x - y$
    $8x - 4y = -4$

9. $x = y - 1$
    $-x + y = -1$

10. $y = -4x + 11$
    $3x + y = 9$

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

12. $3x + y = -5$
    $6x + 2y = 10$

13. $5x - y = 5$
    $-x + 3y = 13$

14. $2x + y = 4$
    $-2x + y = -4$

15. $-5x + 4y = 20$
    $10x - 8y = -40$

مدرسة الشوامخ

Use elimination to solve each system of equations.

1. $-v + w = 7$
$v + w = 1$

2. $y + z = 4$
$y - z = 8$

3. $-4x + 5y = 17$
$4x + 6y = -6$

4. $5m - 2p = 24$
$3m + 2p = 24$

5. $a + 4b = -4$
$a + 10b = -16$

6. $6r - 6t = 6$
$3r - 6t = 15$

7. $6c - 9d = 111$
$5c - 9d = 103$

8. $11f + 14g = 13$
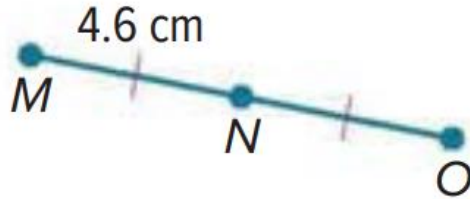$11f + 10g = 25$

9. $9x + 6y = 78$
$3x - 6y = -30$

10. $3j + 4k = 23.5$
$8j - 4k = 4$

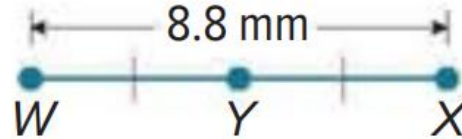**11.** $-3x - 8y = -24$
$3x - 5y = 4.5$

12. $6x - 2y = 1$
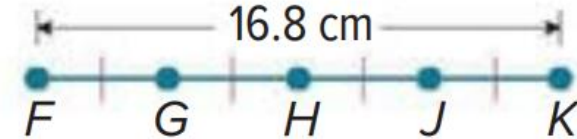$10x - 2y = 5$

مدرسة الشوامخ

Find the measure of each segment.

28. $\overline{MO}$
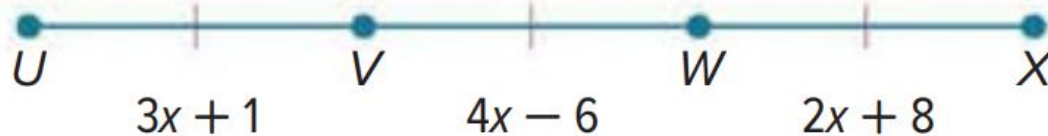
4.6 cm

M

N

O

29. $\overline{WY}$

8.8 mm

W   Y   X

30. $\overline{FG}$

16.8 cm

F   G   H   J   K

31. $\overline{QT}$

14.4 in.

P   Q   R   S   T

32. $\overline{DE}$

$2x + 7$ $4(x - 3)$

C   D   E

33. $\overline{UX}$

U   V   W   X

$3x + 1$ $4x - 6$ $2x + 8$

مدرسة الشوامخ

Find the measure of each segment.

1. $\overline{PR}$

P
5.8 mm
R
3.7 mm
S

2. $\overline{EF}$

2.8 in.
F
2.5 in.
G
E

3. $\overline{JL}$

0.35 cm
0.75 cm
J K L

4. $\overline{HJ}$

H
J 3.1 ft
12.2 ft K

5. $\overline{AC}$

1.6 m
0.4 m C
A B

6. $\overline{SV}$

4.1 in.
T
2.6 in.
S V

7. $\overline{NQ}$

1 in. 1$\frac{1}{4}$ in.
Q P N

8. $\overline{AC}$

4.9 cm 5.2 cm
A B C

9. $\overline{GH}$

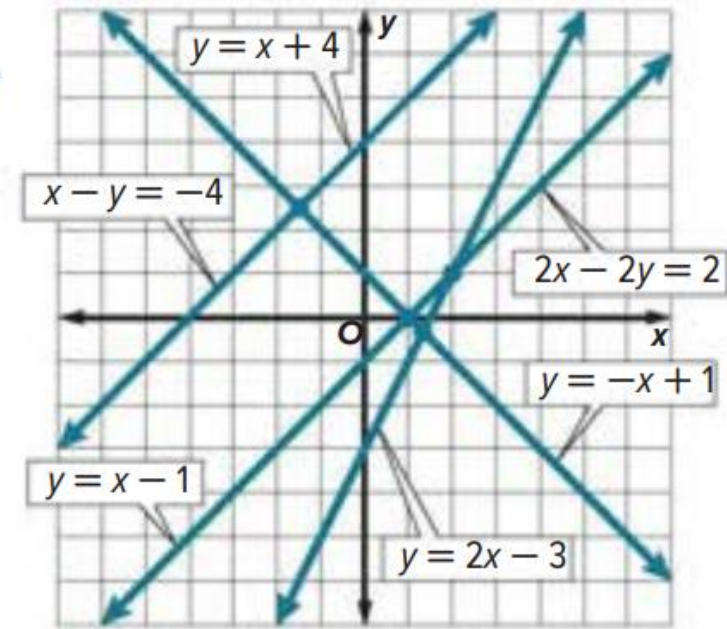
F 9.7 mm G H
15 mm

مدرسة الشوامخ
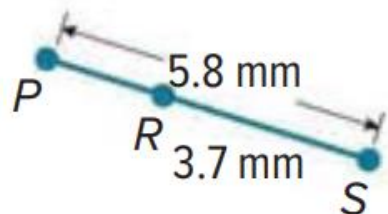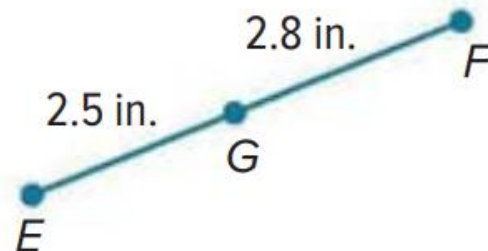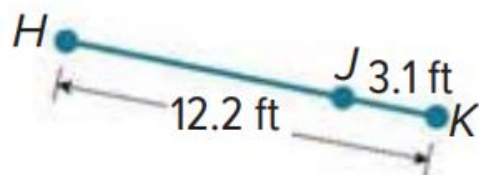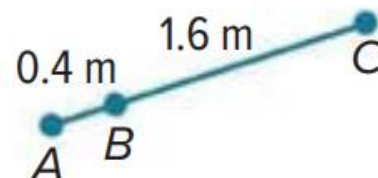
Use the graph to determine the number of solutions the system has. Then state whether the system of equations is *consistent* or *inconsistent* and if it is *independent* or *dependent*.

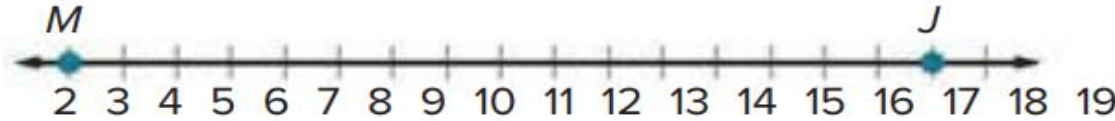1. $y = x - 1$
$y = -x + 1$

2. $x - y = -4$
$y = x + 4$

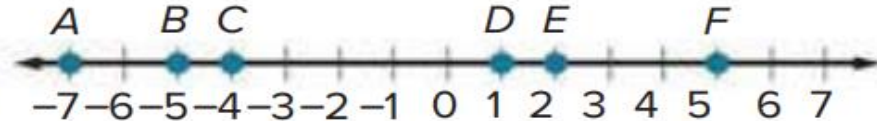3. $y = x + 4$
$2x - 2y = 2$

4. $y = 2x - 3$
$2x - 2y = 2$

مدرسة الشوامخ

Refer to the number line.

M   J

2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

Refer to the number line.

A   B   C   D E   F

−7 −6 −5 −4 −3 −2 −1 0 1 2 3 4 5 6 7

1. Find the coordinate of point B that is $\frac{1}{4}$ of the distance from M to J. **6**

7. Find the coordinate of point G that is $\frac{2}{3}$ of the distance from B to D. **−1**

2. Find the coordinate of point C that is $\frac{7}{8}$ of the distance from M to J. **16**

8. Find the coordinate of point H that is $\frac{1}{5}$ of the distance from C to F. **−2.2**

3. Find the coordinate of point D that is $\frac{7}{16}$ of the distance from M to J. **9**

9. Find the coordinate of point J that is $\frac{1}{6}$ of the distance from A to E. **−5.5**

4. Find the coordinate of point X such that the ratio of MX to XJ is 3:1. **14**

10. Find the coordinate of point K that is $\frac{4}{5}$ of the distance from A to F. **2.6**
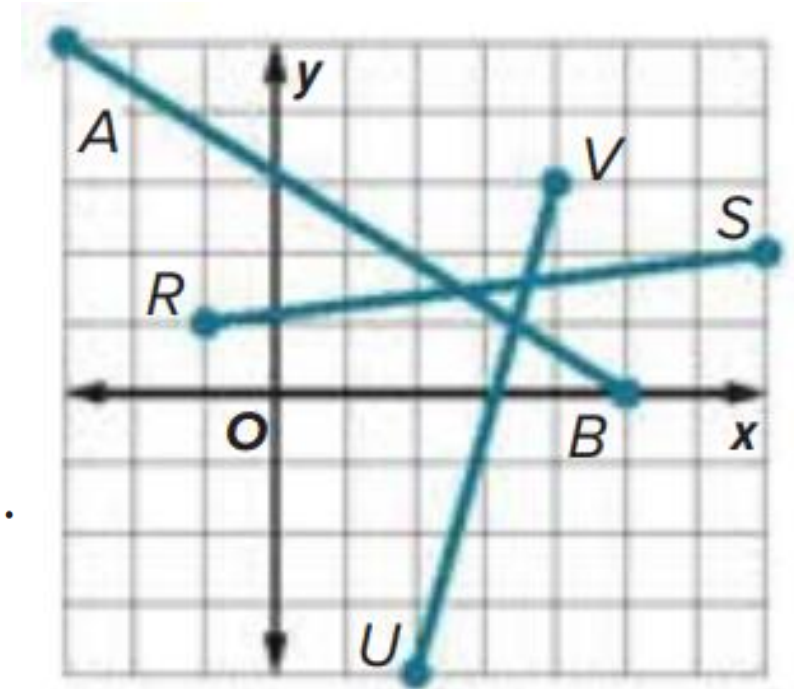
مدرسة الشوامخ

10. Find point D on $\overline{AB}$ that is $\frac{3}{4}$ of the distance from A to B.

11. Find point Z on $\overline{RS}$ such that the ratio of RZ to ZS is 1:3.

12. Find point G on $\overline{AB}$ such that the ratio of AG to GB is 3:2.

13. Find point E on $\overline{UV}$ such that the ratio of UE to EV is 3:4.

مدرسة الشوامخ

Solve each system of inequalities by graphing.

1. $y < 6$
   $y > x + 3$

2. $y \geq 0$
   $y \leq x - 5$

3. $y \leq x + 10$
   $y > 6x + 2$

4. $y \geq x + 10$
   $y \leq x - 3$

5. $y < 5x - 5$
   $y > 5x + 9$

6. $y \geq 3x - 5$
   $3x - y > -4$

7. $x > -1$
   $y \leq -3$

8. $y > 2$
   $x < -2$

9. $y > x + 3$
   $y \leq -1$

10. $x < 2$
   $y - x \leq 2$

11. $x + y \leq -1$
   $x + y \geq 3$

12. $y - x > 4$
   $x + y > 2$

مدرسة الشوامخ

13. FITNESS Diego started an exercise program in which each week he walks from 9 to 12 miles and works out at the gym from 4.5 to 6 hours.

a. Write a system of inequalities to represent this situation. Define your variables.

b. Graph the system.

c. List three viable solutions.

14. SOUVENIRS Emiliana wants to buy turquoise stones on her trip to New Mexico to give to at least 4 of her friends. The gift shop sells stones for either $4 or $6 per stone. Emiliana has no more than $30 to spend.

a. Write a system of inequalities to represent this situation. Define your variables.
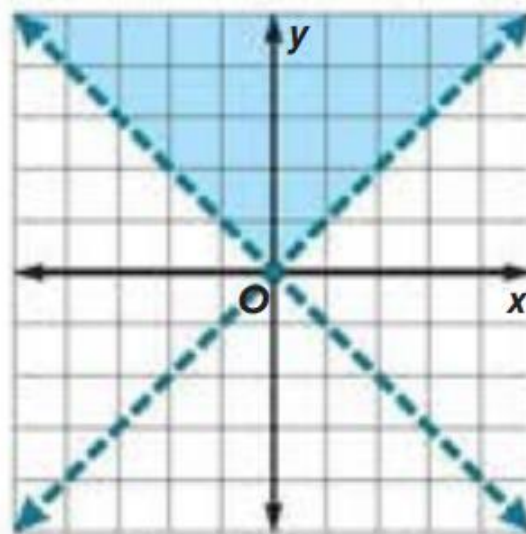
b. Graph the system.

c. List three viable solutions.

Write a system of inequalities for each graph.

15.
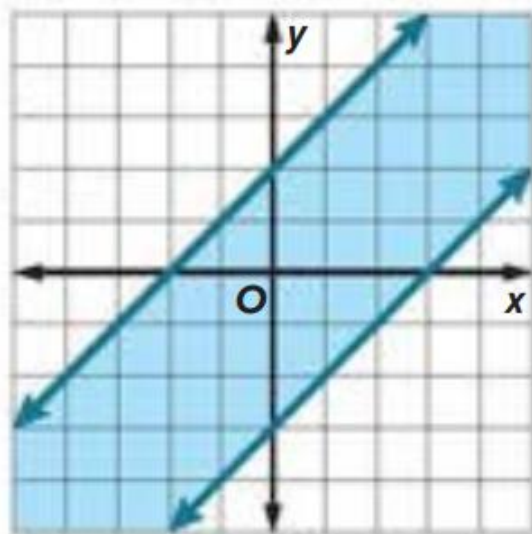
16.

PART 2

Number of FRQ عدد الأسئلة المقالية	6
Marks per FRQ الدرجات للأسئلة المقالية	(5-10)

Find the perimeter or circumference and area of each figure if each unit on the graph measures 1 centimeter. Round answers to the nearest tenth, if necessary.
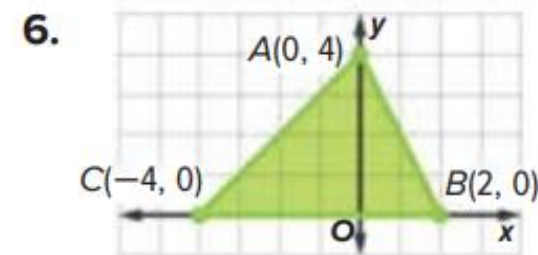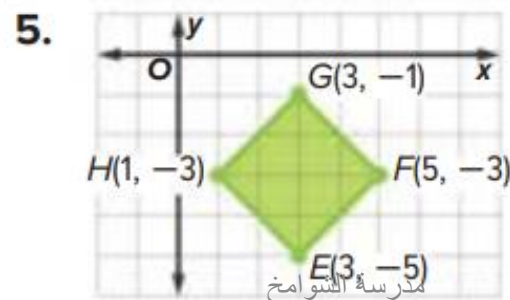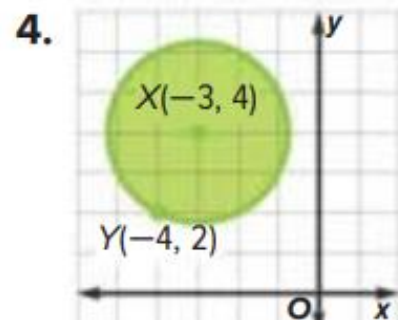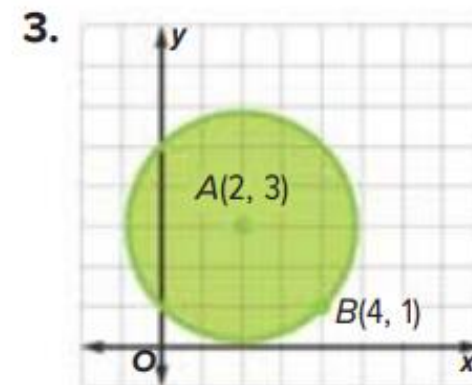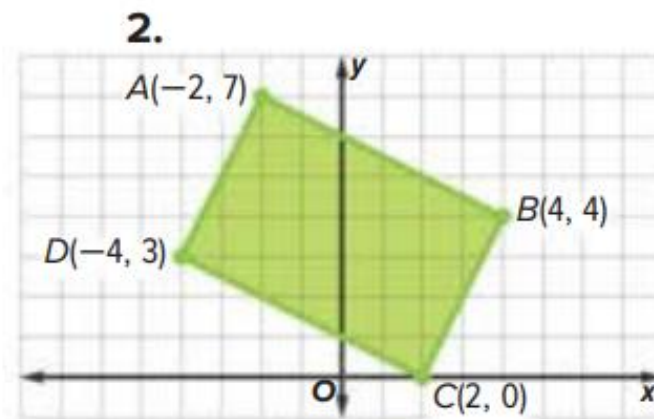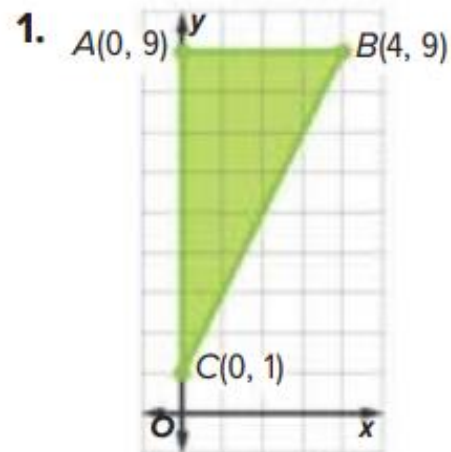
1.

A(0, 9)   B(4, 9)

C(0, 1)

2.

A(−2, 7)

D(−4, 3)   B(4, 4)

C(2, 0)

3.

A(2, 3)

B(4, 1)

4.

X(−3, 4)

Y(−4, 2)

5.

G(3, −1)

H(1, −3)   F(5, −3)

E(3, −5)

مدرسة الشوامخ

6.

A(0, 4)

C(−4, 0)   B(2, 0)

| 17 | Find the coordinates of the midpoint of a segment with the given endpoints | (1-16) | 605 |

Use the number line to find the coordinate of the midpoint of each segment.

J   K   L   M   N   P
−7 −6 −5 −4 −3 −2 −1 0 1 2 3   4 5 6

1. $\overline{KM}$ **2.** $\overline{JP}$ **3.** $\overline{LN}$
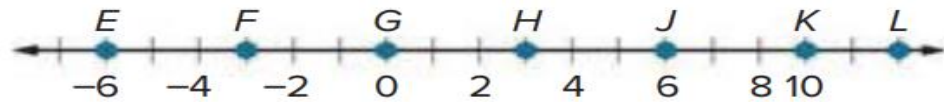
4. $\overline{MP}$ **5.** $\overline{LP}$ **6.** $\overline{JN}$

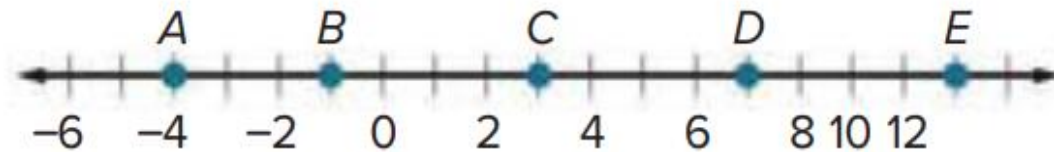**Use the number line to find the coordinate of the midpoint of each segment.**

E   F   G   H   J   K   L
−6   −4   −2   0   2   4   6   8 10

7. $\overline{FK}$ **8.** $\overline{HK}$ **9.** $\overline{EF}$

10. $\overline{FG}$ **11.** $\overline{JL}$ **12.** $\overline{EL}$

    A   B   C   D   E
−6   −4   −2   0   2   4   6   8 10 12

13. $\overline{DE}$ **14.** $\overline{BC}$

15. $\overline{BD}$ **16.** $\overline{AD}$ مدرسة الشوامخ

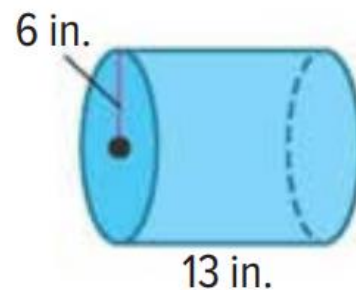**1.** Find the measures of two supplementary angles if the difference between the measures of the two angles is 35°.

2. ∠E and ∠F are complementary. The measure of ∠E is 54° more than the measure of ∠F. Find the measure of each angle.

3. The measure of an angle's supplement is 76° less than the measure of the angle. Find the measures of the angle and its supplement.

4. ∠Q and ∠R are complementary. The measure of ∠Q is 26° less than the measure of ∠R. Find the measure of each angle.

5. The measure of the supplement of an angle is three times the measure of the angle. Find the measures of the angle and its supplement.

6. The bascule bridge shown is opening from its horizontal position to its fully vertical position. So far, the bridge has lifted 35° in 21 seconds. At this rate, how much longer will it take for the bridge to reach its vertical position?

Find the surface area and volume of each solid. Round each measure to the nearest tenth, if necessary.
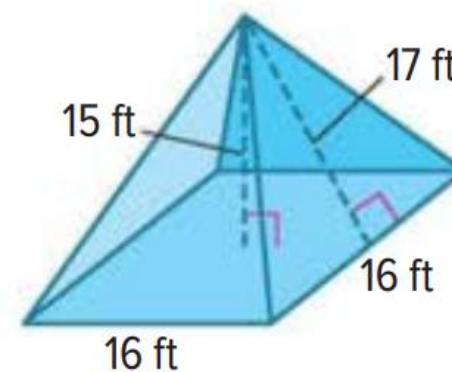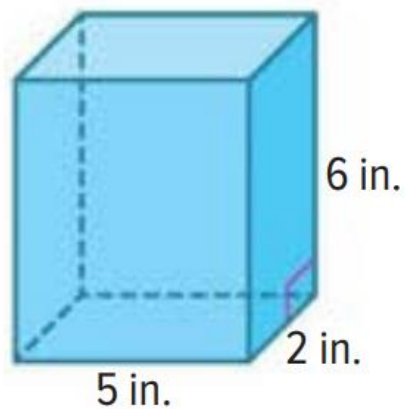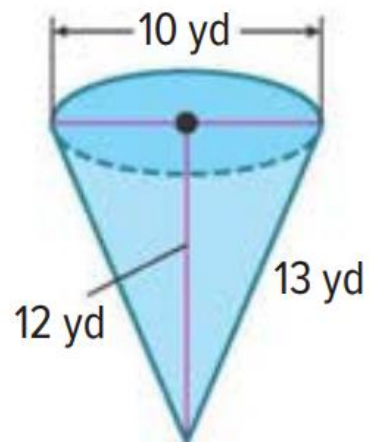
7.
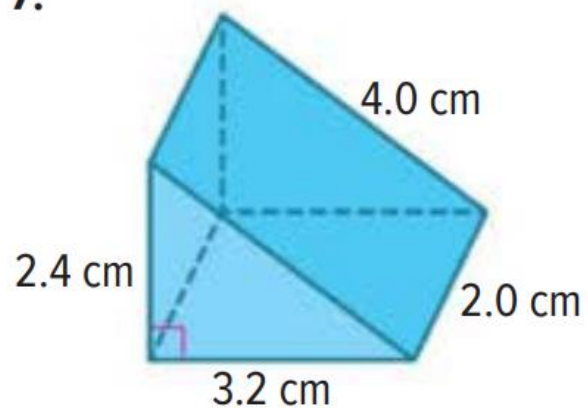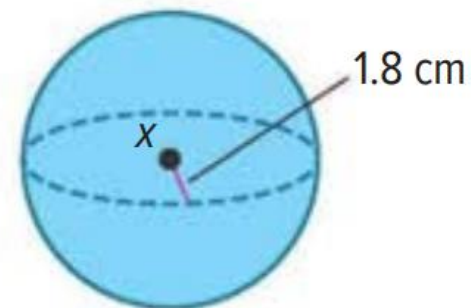
4.0 cm

2.4 cm

2.0 cm

3.2 cm

8.

6 in.

13 in.

9.

17 ft

15 ft

16 ft

16 ft

10.

6 in.

2 in.

5 in.

11.

10 yd

12 yd

13 yd

12.

1.8 cm

X

مدرسة الشوامخ

15. The measure of the supplement of an angle is 60° less than four times the measure of the complement of the angle. Find the measure of the angle.

16. $\angle 6$ and $\angle 7$ form a linear pair Twice the measure of $\angle 6$ is twelve more than four times the measure of $\angle 7$ Find the measure of each angle.
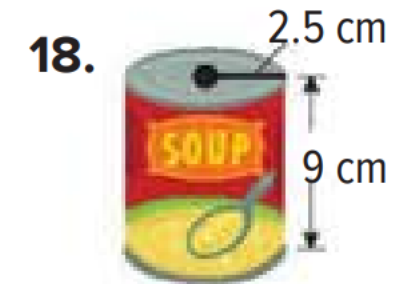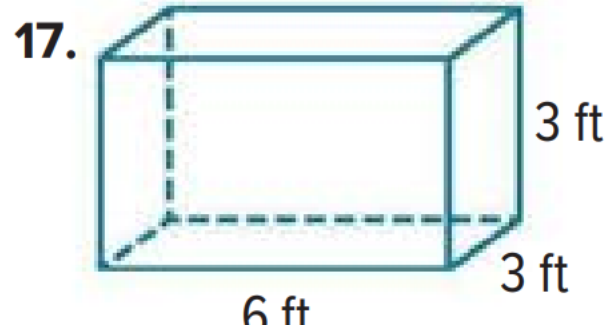
Refer to the figure at the right.

17. If $m\angle ADB = (6x - 4)°$ and $m\angle BDC = (4x + 24)°$, find the value of x such that $\angle ADC$ is a right angle.

18. If $m\angle FDE = (3x - 15)°$ and $m\angle FDB = (5x + 59)°$, find the value of x such that $\angle FDE$ and $\angle FDB$ are supplementary.

19. If $m\angle BDC = (8x + 12)°$ and $m\angle FDB = (12x - 32)°$, find $m\angle FDE$.

مدرسة الشوامخ
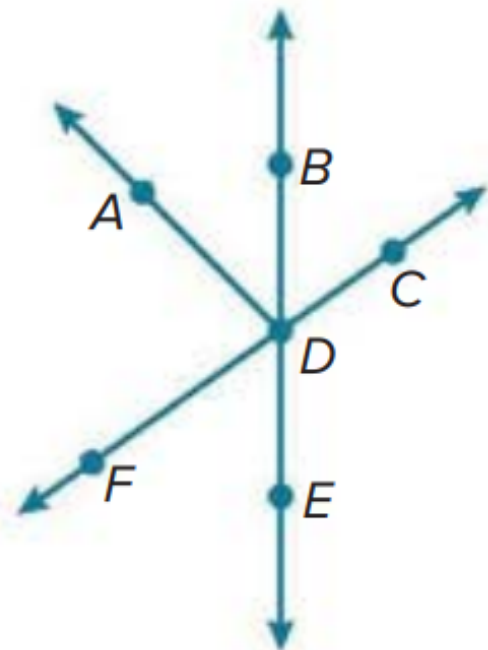
| 21 | Identify the orthographic drawings that best model selected three-dimensional figures. | (17-22) | 676, 677 |

Draw a net for each solid or object.

17.

3 ft

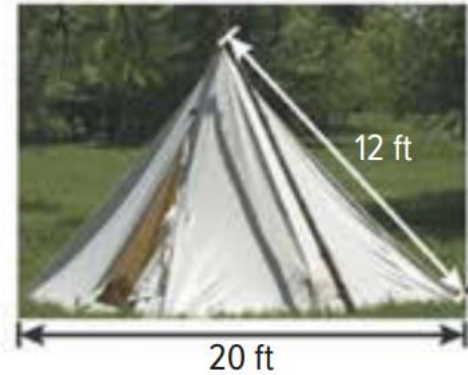3 ft

6 ft

18.

2.5 cm

9 cm

SOUP

Draw a net for each solid or object.

19.

18 in.

18 in. 18 in.

20.

8 in.

6 in.

21.

12 ft

20 ft

22.

2 in.

5 in.