T103 Departmental Final Review
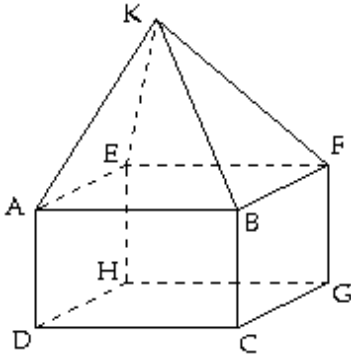## Revised 10/03

Name_____

Be sure to review all notes, supplements, and tests from this course. This is not a sample final!

Use the following figure to verify if the statement is true or false.

1) $\overleftrightarrow{AB}$ and $\overleftrightarrow{GE}$ are skew lines.

2) $\overleftrightarrow{AB}$ and $\overleftrightarrow{CF}$ are parallel lines.

3) $\overleftrightarrow{AB}$ and $\overleftrightarrow{CF}$ are intersecting lines.

4) The intersection of $\overleftrightarrow{KB}$ and plane CGF is point B.

5) $\overleftrightarrow{AK}$ and $\overleftrightarrow{EK}$ are perpendicular to the plane BEF.

6) The intersection of planes AEF, FGC and BCD is point B.

7) $\overleftrightarrow{AD}$ and $\overleftrightarrow{BD}$ are coplanar lines.

8) ABE and DCG are parallel planes.

Refer to this figure to answer the question. Line DH is parallel to line IM. Line BO is perpendicular to line DH.
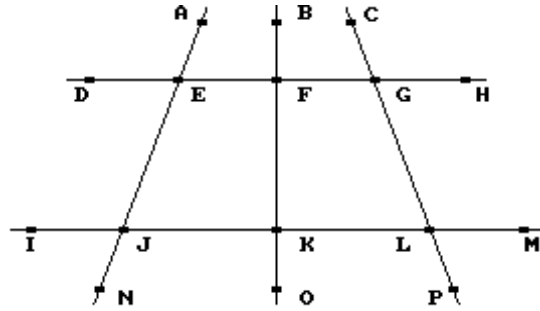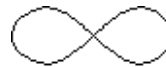

9) m(∠IJN) is 56°. What is the measure of ∠EJK?

10) m(∠IJN) is 53°. m(∠IJN) = m(∠PLM). What is the measure of ∠FGC?

11) Are ∠MLG and ∠FGC supplementary?

12) m(∠IJN) is 54°. What is the measure of ∠JEF?

13) m(∠IJN) is 54°. m(∠IJN) = m(∠PLM). What is the measure of ∠FGL?

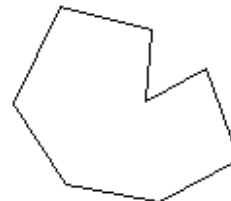**Categorize each of the following as: simple, closed, polygonal, concave polygon, convex polygon**
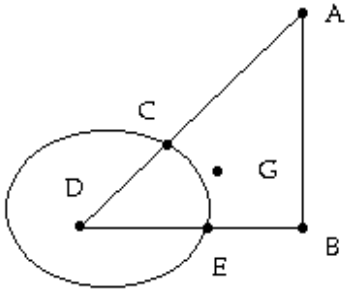
14)
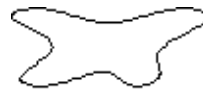
15)

16)

**Use the labeled points in the following drawing to answer the questions.**

- F

A

C

G

D

E

B

17) Which points belong to the interior of the triangle and the ellipse?

18) Which points belong to the triangle ABD?

19) Which points belong to the exterior of the ellipse?

20) Which points belong to the intersection of the triangle and the ellipse?

21) Which points belong to the exterior of the triangle and the ellipse?

22) Which points belong to the interior of the ellipse?
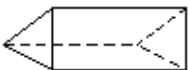
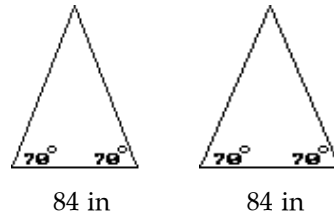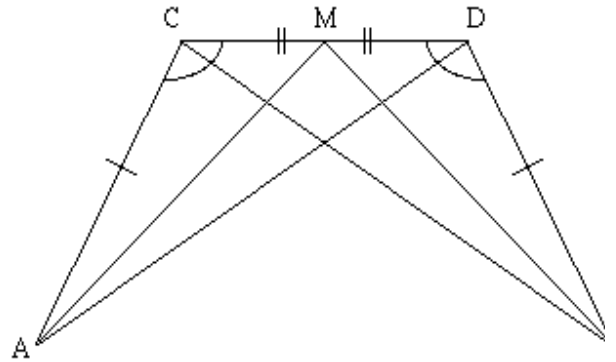**Give the name of the solid.**

23)
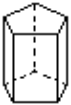
24)

25)

26)

State whether the pair of triangles is congruent. If the information given is not sufficient, state "No conclusion possible".
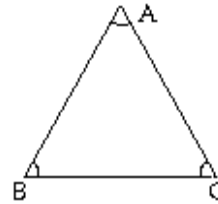
27)

70° 70°

84 in

70° 70°

84 in

28) Decide whether the following figure contains a pair of congruent triangles. If so, justify with a property.

C   M   D

A

Use only a straightedge and compass to construct the following.

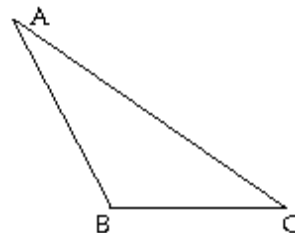29) Copy Angle B and then bisect Angle C.
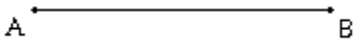
A

B   C

Answer the question.

30) Construct a line through a point P parallel to a line l using the rhombus method.

Use only a straightedge and compass to construct the following.

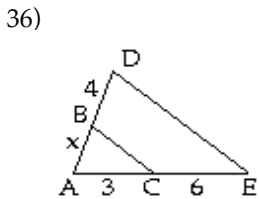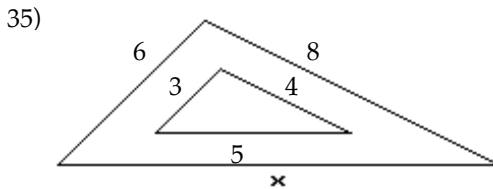31) Given an obtuse triangle ABC, construct an altitude from vertex A.

A

B   C

32) Construct the perpendicular bisector of AB.

A •————————————————• B

33) Construct a 60° angle.

34) Use any tools to construct a triangle with angles measuring 60° and 70° and a non–included side of 8 cm on a side of the 60° angle.

These triangles are similar. Find the missing length.

35)

36)

Convert the units.

37) 0.0054349 km = _____ mm

38) 42,240 feet = _____ miles

39) 9 yd = _____ in.

40) 2736 in.^{2} = _____ ft^2

41) 70 cm^2 = _____ mm^2

42) 63 ft^3 = _____ yd^3

43) 75 ft^3 = _____ yd^3

Answer the question.

44) If the measure of an angle is 45° 23' 56", what is the measure if its complement?

45) How many diagonals does a 15 sided polygon have?

46) What is the measure of each interior angle in a regular nonagon?

47) A pyramid has 20 edges. How many vertices does it have?

48) A prism has 21 edges. How many vertices and faces does it have?

49) A line intersects a plane at only one point. Is this line contained in the plane?

50) True or False: A rectangle is always square.

51) True or false : a trapezoid is a kite.

52) True or false: a rectangle is a trapezoid.

53) Is a kite a parallelogram?

54) When is a rectangle a parallelogram?

55) When is a parallelogram a rhombus?

56) A tree casts a shadow 35 meters long. At the same time, the shadow cast by a vertical 7 meter stick is 5 meters long. Find the height of the tree.

57) The outfield wall in a baseball park is in the shape of a quarter circle. If the radius of the circle is 12 feet, how long is the wall? Use 3.14 for π. Round your answer to the nearest tenth.

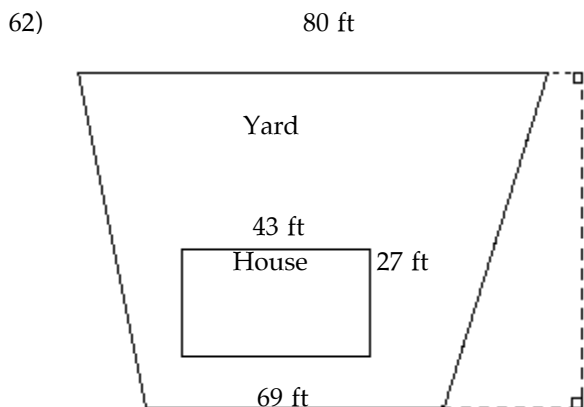58) Find the side length of a square with the same perimeter as a circle with radius 5 in. Use 3.14 for π.

59) Find the area of the following if the area of each square is one square unit.
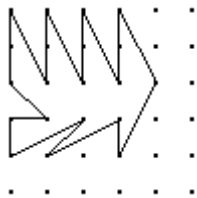
60) Find the area of a regular hexagon with sides 14 cm.

61)

36 in.

14 in.

22 in.

5 in.

15 in.
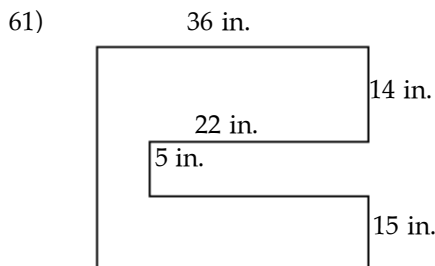
Find the area of the figure above

62)

80 ft

Yard

43 ft

House   27 ft

69 ft

A homeowner wants to know how much grass seed to buy. First the size of the yard must be determined Use the drawing to determine how many square feet are in the yard. The height of the trapezoid is 79 ft.

63) Find the area of a square with perimeter 144 in.

64) Find the area of a sector with radius 9 mm and interior angle 99°

65) Cindy wants to secure sequins on a piece of felt shaped like a trapezoid with a height of 11 cm and bases of 19 cm and 13 cm. What is the cost of all the sequins if sequins cost $0.80 per cm^2 of coverage?

66) Judy wants to tile her 25 ft by 40 ft living room. If each square tile is 6 inches on a side, how many tiles does she need?

67) Starting from Joe's Gas Station, a car travels due north on Avenue A for 1.7 mi, then turns right and travels on Cedar Street for 1.0 mi, and then turns left and travels on Washington Avenue for 0.5 mi. How far (to the nearest tenth of a mile) is the car from Joe's Gas Station?

68) Find the value for x in the prism.   Use exact values.

4 in.

x

10 in.

8 in.
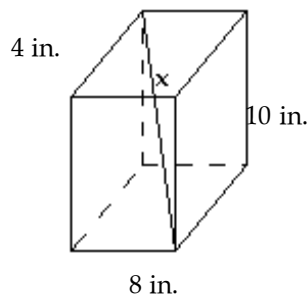
69) Find the surface area of a rectangular solid.

7 mm

24 mm

25 mm
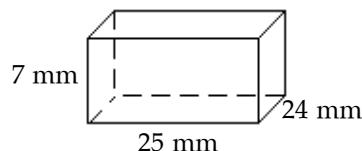
70) Find the surface area of a right circular cylinder with d = 8.2 m, h = 5.2 m
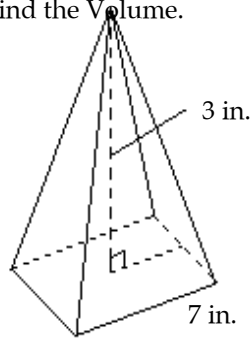
71) Find the surface area of a sphere with d = 8.4 yd

72) Find the surface area of a right circular cone with d = 4 cm, h = 11 cm

73) Find the volume of a cube measuring 28 m on each edge.

74) Find the volume of a triangular pyramid with base area 16 ft^2 and height 9 ft. Find the result to the nearest unit.
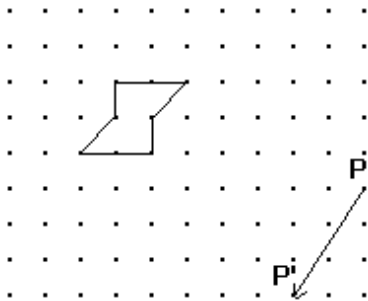
75) Find the Volume.


3 in.

7 in.

Square-based pyramid

76) Find the volume of a cylinder with diameter 9.4 cm and height 8.9 cm. Use 3.14 for π. Round your answer to the nearest tenth.

77) A sphere has a 8 in. diameter. What is its volume to the nearest hundredth?

78) Find the image of the given figure under the translation that takes P to P'.
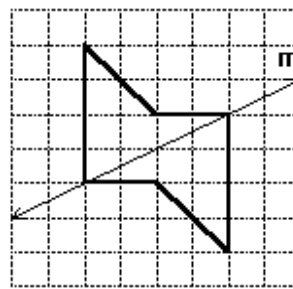

79) The image of a figure under the translation that takes P to P' is shown. Find the original figure. Note again, the given figure is the image after translation.
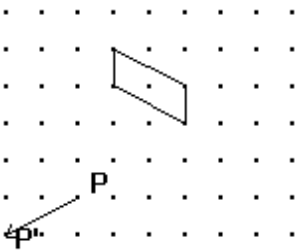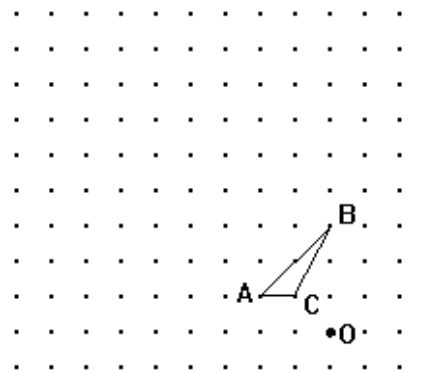

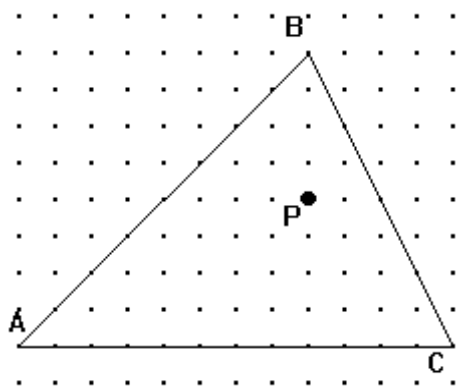80) Find the image of the given figure under a 90° clockwise rotation about P.
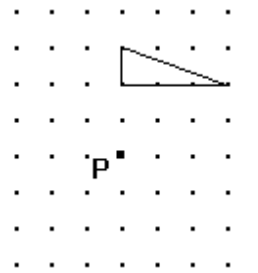
81) Find the image of the given figure under a reflection across the mirror line m.
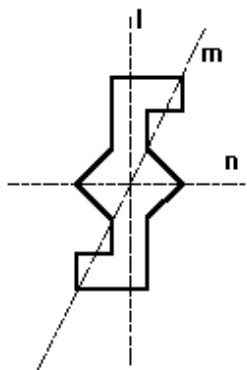

82) Find the image of triangle ABC for the size transformation with center O and scale factor 3.

5

83) Find the image of triangle ABC for the size transformation with center P and scale factor 1/4.

84) Which of the lines in the picture are lines of symmetry of the given figure?

1) Answer: TRUE

2) Answer: FALSE

3) Answer: FALSE

4) Answer: TRUE

5) Answer: FALSE

6) Answer: TRUE

7) Answer: TRUE

8) Answer: TRUE

9) Answer: 56°

10) Answer: 53°

11) Answer: Yes

12) Answer: 126°

13) Answer: 126°

14) Answer: Simple closed curve

15) Answer: Closed curve

16) Answer: simple, closed, polygonal, concave polygon

17) Answer: None

18) Answer: A, C, D, E, B

19) Answer: F, A, G, B

20) Answer: C, E

21) Answer: F

22) Answer: D

23) Answer: Right pentagonal prism

24) Answer: Octagonal pyramid

25) Answer: Triangular prism

26) Answer: Right circular cone

27) Answer: Congruent

28) Answer: SAS

29) Answer:

30) Answer:

31) Answer:

32) Answer:

33) Answer:

34) Answer:

35) Answer: x = 10

36) Answer: 2

37) Answer: 5434.9

38) Answer: 8

39) Answer: 324

40) Answer: 19

41) Answer: 7000

42) Answer: 2.33

43) Answer: 2.78

44) Answer: 44° 36' 4"

45) Answer: 90

46) Answer: 140°

47) Answer: 11

48) Answer: 14, 9

49) Answer: No

50) Answer: False

51) Answer: False

52) Answer: True

53) Answer: No

54) Answer: Always

55) Answer: A parallelogram is a rhombus if all of its sides are congruent.

56) Answer: 49

57) Answer: 18.8 feet

58) Answer: 7.85 in.

59) Answer: 9

60) Answer: 509.22 cm^2

61) Answer: 1114 in.^{2}

62) Answer: 4724.5 sq. ft

63) Answer: 1296 in.^{2}

64) Answer: $\frac{891}{40}\pi$ mm^2

65) Answer: $140.80

66) Answer: 4000 tiles

67) Answer: 2.4 mi

68) Answer: $\sqrt{180}$ in.

69) Answer: 1886 mm^2

70) Answer: 239.5 m^2

71) Answer: 221.6 yd^2

72) Answer: 82.8 cm^2

73) Answer: 21,952 m^3

74) Answer: 48 ft^3

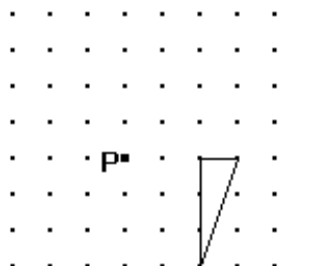75) Answer: 49 cu. in.

76) Answer: 617.3 cm^3

77) Answer: 267.95 in.^{3}
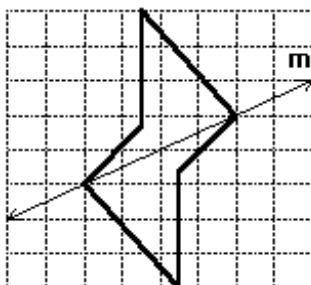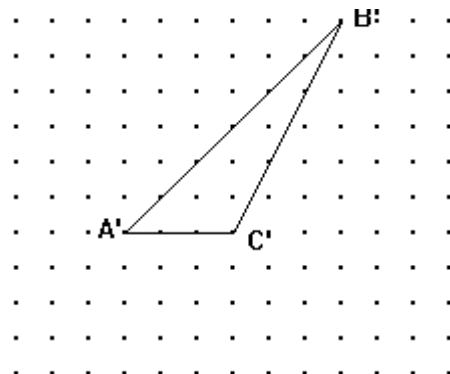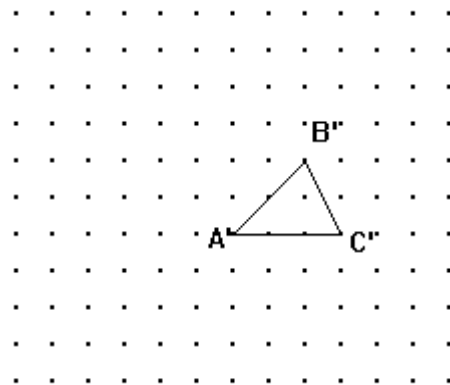
78) Answer:
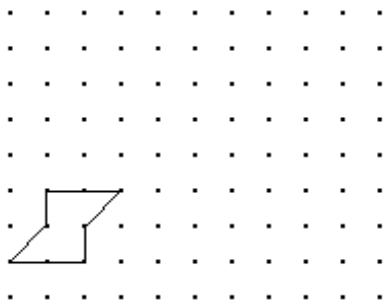
79) Answer:
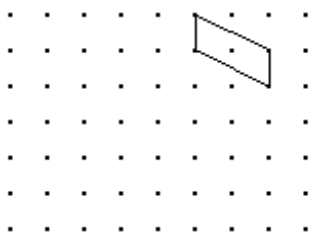
80) Answer:

81) Answer:

82) Answer:

83) Answer:

84) Answer: No reflection symmetry