Station A

1. Make the following conversions.

a) 4 kg = __400__ dag
→ 2

b) 0.23 ml= __0.023__ L
← 3

c) 5 cm = __50__ mm
→ 1

d) 4875 g = __4.875__ kg
← 3

e) 12.3 hm = __1230.00__ cm
→ 4

f) 3 kl = __3000__ L
→ 3

2. Make the following conversions.

a) 156 " = __13__ ft
12"

b) 35 lbs.= __560__ oz.
1 lb = 16 oz
×

c) 28 pints= __14__ quart
1 quart = 2 pints

d) 178" = __4__ yd. __2__ ft. __10__ in.
÷ 36
36×4 =144
34 ↓ 24"

e) 112 lbs.= __8.7__ stones
1 stone = 14 lbs   (8)

d) 7 pints= __112__ fl. Oz.
1 pint = 16 FLOZ
×

3. Make the following conversions. Round to 2 decimal places if necessary.

a) 56" = __142.24__ cm 1" = 2.54cm
×

b) 45 lbs. = __20 411.55__ g 1lb=453.59g

c) 15 gal. = __57__ L
1 gallon = 3.8L
×

d) 12 km = __7.4__ mi. 1 mile =1.62km

e) 186 mL = __0.3875__ pints
1 pint = 480mL
÷

f) 75 kg = __165.3__ lbs.
↓
= 75000 g
1lb=453 59g

Station B

1. Solve for x. Round to 2 decimal places.

a)

13 cm | 24 cm, x
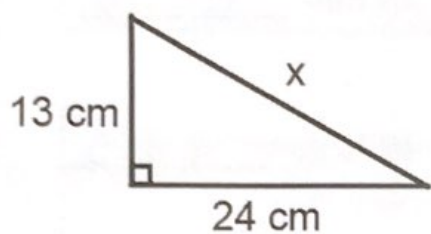
$$a^2 + b^2 = c^2$$
$$(13)^2 + (24)^2 = x^2$$
$$169 + 576 = x^2$$
$$745 = x^2$$
$$\pm\sqrt{745} = x$$
$$x = 27.3 \text{ cm}, \; x > 0$$

b)

32 ft., x, 45 ft.
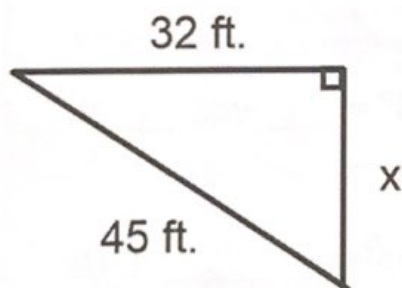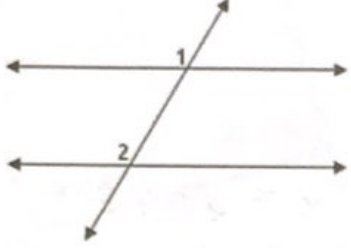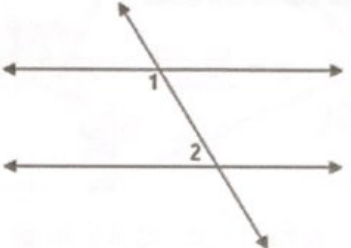
$$a^2 + b^2 = c^2$$
$$x^2 + 32^2 = 45^2$$
$$x^2 = 2025 - 1024$$
$$x^2 = 1001$$
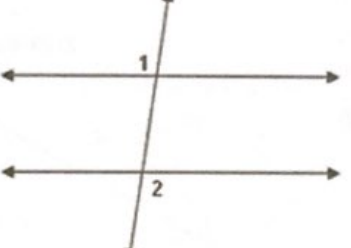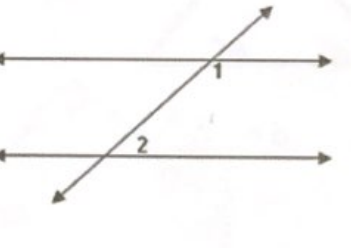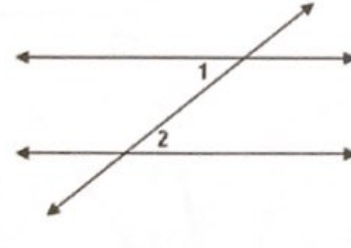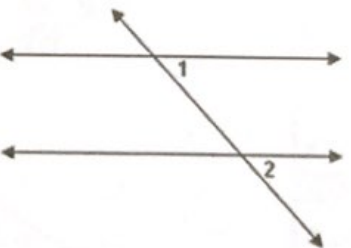$$x = \pm\sqrt{1001}$$
$$x \doteq 31.6 \text{ ft}, \; x > 0$$

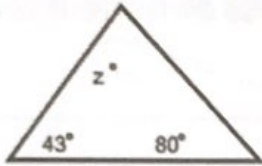# Station C

1. State the parallel line theorem pattern (Z, F or C) or none if it does not match any of them.

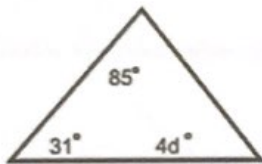Answer: ___F___   Answer: ___C___

Answer: ___None___   Answer: ___C___

Answer: ___Z___   Answer: ___F___

Station D

1)

z = $\underline{57}°$ (ASTT)

2)

$180 = 85 + 31 + 4d$
$180 - 85 - 31 = 4d$
$$\frac{4d}{4} = \frac{64}{4}$$
$d = 16$

d = $\underline{16}°$
(ASTT)

3) Determine the value of the unknowns.

a)
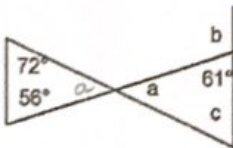
$a = 52°$ (ASTT, OAT)

$c = 67°$ (ASTT)

$b = 119°$ (SAT)

b)
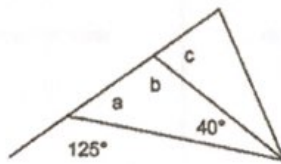
$a = 55°$ (SAT)

$b = 85°$ (ASTT)

$c = 95°$ (SAT)

c)
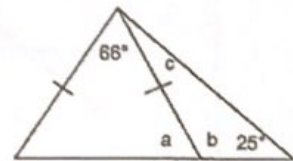
$a = \dfrac{180 - 68}{2}$

$a = 56°$ (ITT)

$b = 124°$ (SAT)

$c = 31°$ (ASTT)

Station E

1. Find the value of x in the figure given.

a)

4x

$113°$

2x + 9°

3x + 8°

Sum = 180 (5-2)
  = 180·3
  = 540°
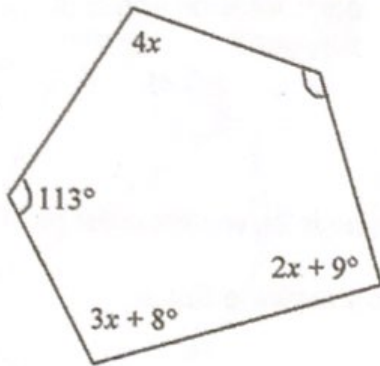
Sum = 4x + 113 + 113 + 3x + 8 + 2x + 9
540 = 9x + 243
540 - 243 = 9x
  297 = 9x   → x = 33°

b)

x°

47°

95°

50°   102°

x = 360 - 47 - 102 - 50 - 95
x = 66°

2. Find the value of x.

a)

60°

x°

x°   x°
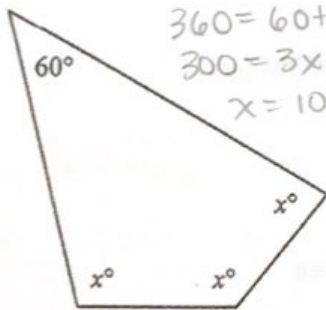
360 = 60 + 3x
300 = 3x
  x = 100°

b)

x°

42°

110°

138°

2x°

80°   100°
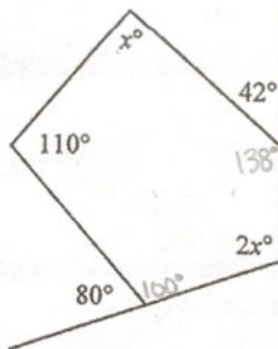
Sum = 540°
540 = x + 110 + 100 + 2x + 138
540 = 3x + 348
  3x = 540 - 348
  $\frac{3x}{3} = \frac{192}{3}$
    x = 64°

3)

83°

107°

x   79°
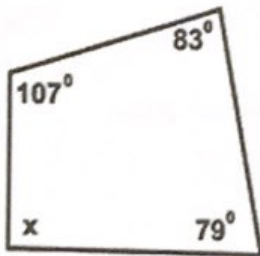
Solve for x   91°

Station F

1. Determine how many sides does a regular polygon have if one of its interior angles measures 140?

Ext ∠
= 40°

$\frac{360}{40} = 9$

$140n = 180(n-2)$
$140n = 180n - 360$
$360 = 180n - 140n$
$360 = 40n$

→ $\frac{360}{40} = \frac{40n}{40}$
$9 = n$

2. How many degrees are there in each interior angle of 12 sided polygon?

Sum = 180(12-2)
= 1800°

Each Angle
= 1800÷12
= 150°

3) The measure of an exterior angle of a regular polygon is 2x, and the measure of an interior angle is 4x.

a) Use the relationship between interior and exterior angles to find x.

4x / 2x

$4x + 2x = 180$
$\frac{6x}{6} = \frac{180}{6}$
$x = 30°$

b) Find the measure of one interior and exterior angle.

Interior
= 4x
= 4(30)
= 120°

Exterior
= 2x
= 2(30)
= 60°

c) Find the number of sides in the polygon and the type of polygon.

$n = \frac{360}{60}$
= 6

4) The measure of one exterior angle of a regular polygon is given.
Find the number of sides for each.

a)   72° $n = \frac{360}{72}$

$n = 5$

b)   40° $n = \frac{360}{40}$

$n = 9$

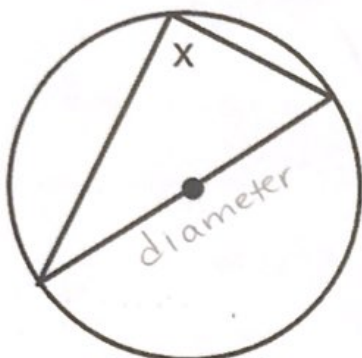**5)** Find the measure of an interior and an exterior angle of a regular 46-gon.

Ext ∠
= 360÷46
= 7.8°

Int ∠
= 180 - 7.8
= 172.2°

Station G

1.   Determine the value of x in each diagram.

a)

diameter

$x = 90°$

b)

56°
inscr. angle

X
Central angle

$x = 2(56)$
$x = 112°$

c)

X
Inscr. angle

115°
Central angle

$x = \dfrac{115}{2}$
$x = 57.5°$

d)

74°

X

$x = 74°$

e)

25°

X

$x = 25°$

f)

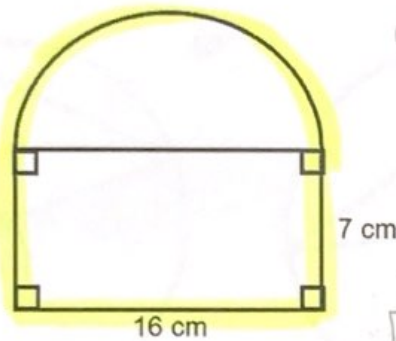48°

diameter

X
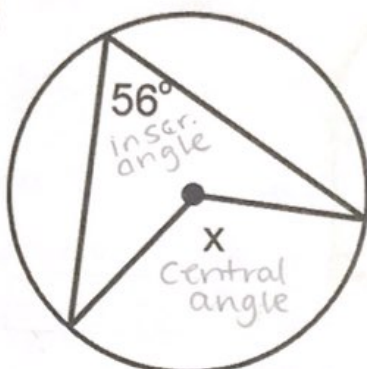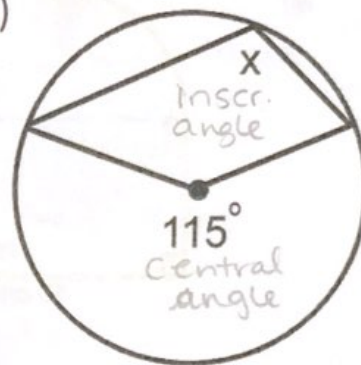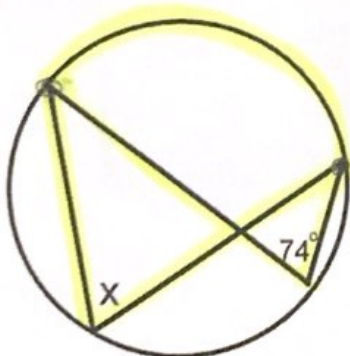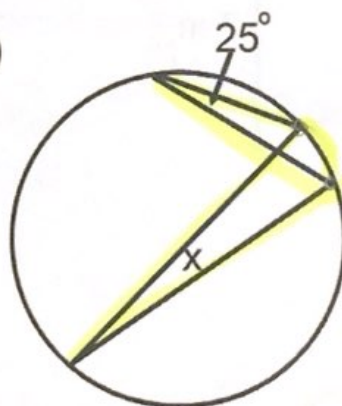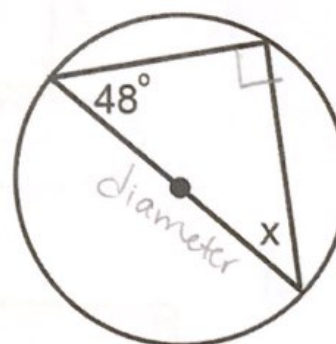
$x = 180 - 90 - 48$
$x = 42°$

Station H

1.   Determine the perimeter and area of each composite figure.

a)

$C(semi) = \dfrac{\pi d}{2}$

$= \dfrac{\pi(16)}{2}$

$\doteq 25.1\,cm$

$P = 25.1 + 7 + 16 + 7$

$\boxed{P \doteq 55.1\,cm}$

$A(semi) = \dfrac{\pi r^2}{2}$

$= \dfrac{\pi(8)^2}{2}$

$\doteq 100.5\,cm^2$

$A(rect) = lw$

$= 7(16)$

$= 112\,cm^2$

Total Area $= 100.5 + 112$

$\boxed{A = 212.5\,cm^2}$

7 cm

16 cm

b)

8 m

2 m

2 m   4 m

5m   ②   5m

2 m

7 m
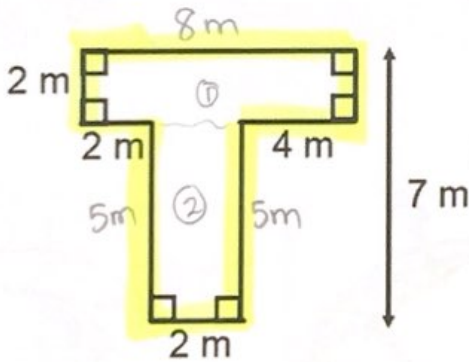
$P = 8 + 2 + 4 + 5 + 2 + 5 + 2 + 2$

$= (8 + 7 + 8 + 7)$

$\boxed{P = 30\,m}$

$A_① = lw$
$= (8)(2)$
$= 16\,m^2$

$A_② = lw$
$= 5(2)$
$= 10\,m^2$

Total Area
$= 16 + 10$
$\boxed{A = 26\,m^2}$

c)

9"

5"   ①   5"   ②

c

7"

16"
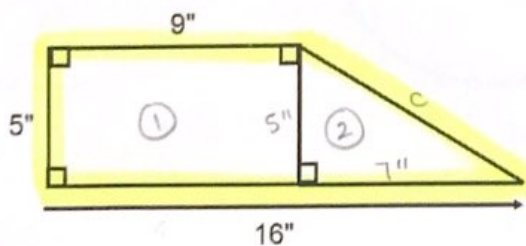
$a^2 + b^2 = c^2$

$(5)^2 + (7)^2 = c^2$

$74 = c^2$

$c = \sqrt{74}$

$c \doteq 8.6\,"$

$P = 9 + 5 + 16 + 8.6$

$\boxed{P = 38.6\,"}$

$A_① = lw$
$= 9(5)$
$= 45\,in^2$

$A_② = \dfrac{bh}{2}$
$= \dfrac{7(5)}{2}$
$= 17.5\,in^2$

Total Area $= 45 + 17.5$
$\boxed{A = 62.5\,in^2}$

Station I

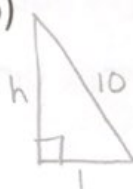1. Determine the volume.

a)

5 in — 6.1 in
7 in   13 in
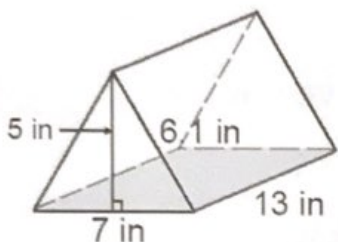
$V = \dfrac{b\ell h}{2}$

$= \dfrac{(7)(5)(13)}{2}$

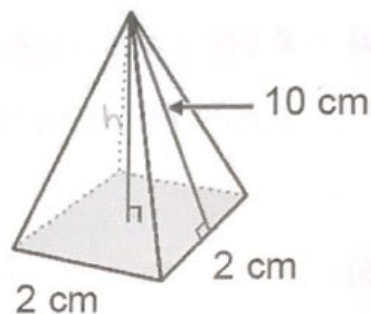$V \doteq 227.5 \text{ in}^3$

b)

h   10

$a^2 + b^2 = c^2$
$(1)^2 + (h)^2 = 10^2$
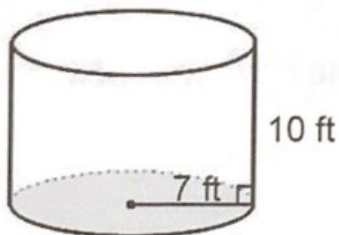$h^2 = 100 - 1$
$h^2 = 99$
$h \doteq 9.9 \text{ cm}$

10 cm
h
2 cm
2 cm

$V = \dfrac{b^2 h}{3}$

$= \dfrac{(2)^2 (9.9)}{3}$
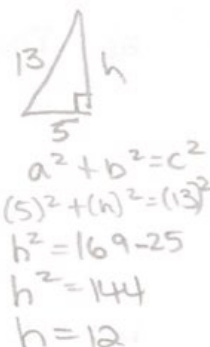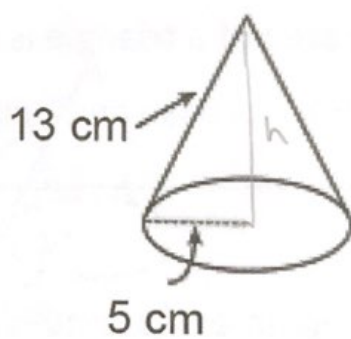
$V \doteq 13.3 \text{ cm}^3$

c)

10 ft
7 ft

$V = \pi r^2 h$
$= \pi (7)^2 (10)$
$= 1539.4 \text{ ft}^3$

d)

13 cm   h
5 cm

13   h
5

$a^2 + b^2 = c^2$
$(5)^2 + (h)^2 = (13)^2$
$h^2 = 169 - 25$
$h^2 = 144$
$h = 12$

$V = \dfrac{\pi r^2 h}{3}$

$= \dfrac{\pi (5)^2 (12)}{3}$

$V \doteq 314.2 \text{ cm}^3$

Station J

1.   Fill in the blanks.

a)   A cone has a volume of 600 cm³.

   A cylinder with the same dimensions has a volume of ___1800 cm³___.
      x3

b)   A square based pyramid has a volume of 36 m³.

   A square based prism with the same dimensions has a volume of
   ___108 m³___.   x3

2.   Fill in the blanks.

a)   The area of a triangle is 48 sq. ft.

   $A = \frac{bh}{2}$ $A = \frac{2b \cdot 2h}{2}$

   $= \frac{4bh}{2}$

   If both the base and height are doubled, the new area of the triangle
   is ___192 sq. ft___.   (x4)

b)   The volume of a cone is 250 mm³. $V = \pi r^2 h$

   x9   x2

   If the radius of the base is tripled and the height is doubled, the new
   volume of the cone is ___4500 mm³___.   (x18)

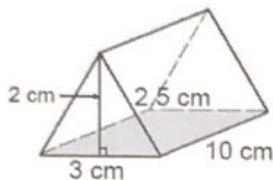c)   The circumference of a circle is 38".

   If the radius if halved, the new circumference of the circle is
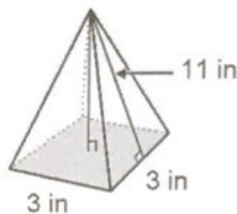   ___19"___.   (÷2)
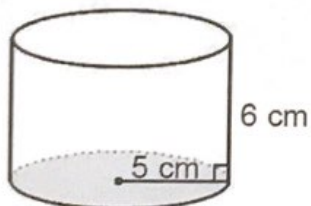
Station K

1. Determine the surface area.

a)

2 cm   2.5 cm
3 cm   10 cm

$SA = 2 \times \frac{(3)(2)}{2} + 2 \times (2.5)(10) + 3(10)$

$= 6 + 50 + 30$

$= 86 \text{ cm}^2$

b)

11 in
h
3 in
3 in

$SA = (3)(3) + 4 \times \frac{(3)(11)}{2}$

$= 9 + 66$

$= 75 \text{ in}^3$

c)

6 cm
5 cm

$SA = 2 \times \pi(5)^2 + 2\pi(5)(6)$

$= 157.07 + 188.5$

$\doteq 345.6 \text{ cm}^3$

d)

11 ft
3 ft
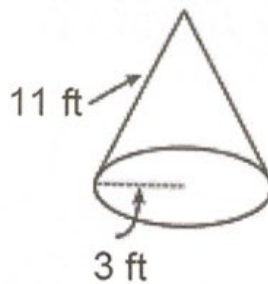
$SA = \pi r^2 + \pi r s$

$= \pi(3)^2 + \pi(3)(11)$

$\doteq 28.27 + 103.67$

$\doteq 131.9 \text{ ft}^2$