Worksheet 2015-8ℰQ-00005(1)

(1) Convert the following to the given units in brackets:

(a) 155 cm^2 (mm^2)

$= 155 \times (10)^2\ mm^2$

$= 15\ 500\ mm^2$

(b) 0,112 km^2 (cm^2)

$= 0,112 \times (100\ 000)^2\ cm^2$

$= 1\ 120\ 000\ 000\ cm^2$

(c) 28 cm^3 (mm^3)

$= 28 \times (10)^3\ mm^3$

$= 28\ 000\ mm^3$

(d) 0,1 m^3 (cm^3)

$= 0,1 \times (100)^3\ cm^3$

$= 100\ 000\ cm^3$

(e) 2 000 m^2 (km^2)

$= 2\ 000 \div (1000)^2\ km^2$

$= 0,002\ km^2$

(f) 16 mm^3 (cm^3)

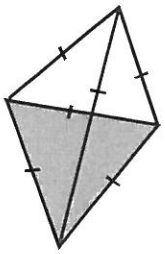
$= 16 \div 10^3\ cm^3$

$= 0,016\ cm^3$

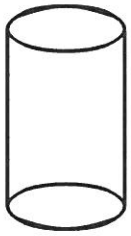
(2) Classify each of the following polyhedrons. Use the words in the word bank.

Cube	Cylinder	Cone
Sphere	Rectangular pyramid	Tetrahedron
Prism on a hexagonal base		

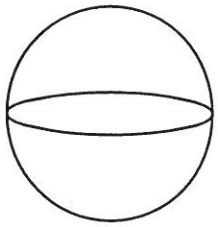
(a)



(b)



(c)



Tetrahedron

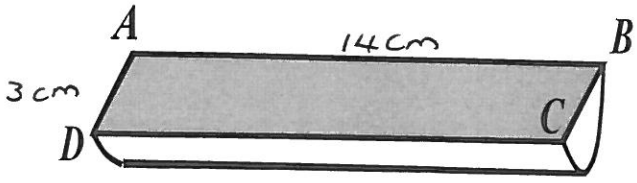
Cylinder

Sphere

(3) Calculate the surface area of the following, correct to 2 dec:

(a) AB = 14 cm and AD = 3 cm → diameter

∴ r = 1,5cm



Surface area

= ½ cylinder + Rectangle ABCD

= ½ [2πr(r+H)] + [L x B]

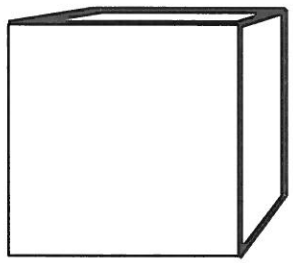
= ½ [2π x 1,5 (1,5+14)] + [14 x 3]

= 73,042... + 42

= 115,042...

≈ 115,04 cm^2

(b) Adjacent is a cube with side lengths of 24,5 mm



Surface are

= 6 x area square

= 6 x L^2

= 6 x $(24,5\ mm)^2$

= 6 x 600,25 mm^2

= 3601,5 mm^2

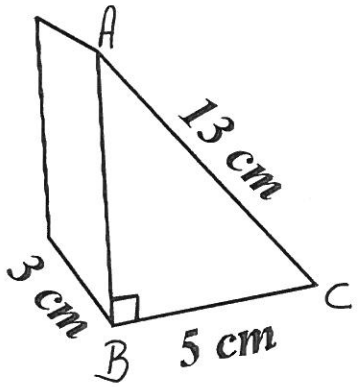
(4) Describe the difference between a hexagon and a hexahedron.

Hexagon → polygon with six angles and six sides. ∴ Two-dimensional

Hexahedron → Polyhedron with six faces. ∴ Three-dimensional

(5) Calculate the volume, correct to 1 dec, of each of the following.
Also give the volume in cm^3.

(a)



$AC^2 = AB^2 + BC^2$ [Pyth]

$(13)^2 = AB^2 + (5)^2$

$169 - 25 = AB^2$

$\therefore AB^2 = 144$

$\therefore AB = 12$

Volume

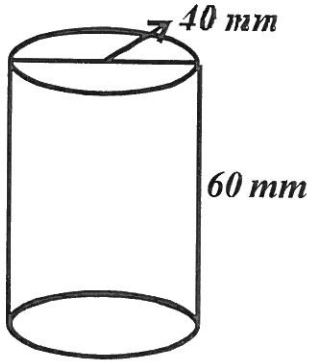
= area base × H

$= (\frac{1}{2} b \times h) \times H$

$= (\frac{1}{2} \times 5 \times 12) \times 3$

$= 90\ cm^3$

(b)



$d = 40$ mm

$\therefore r = 20$ mm

Volume

$= \pi r^2 H$

$= \pi (20)^2 (60)$

$= 75\,398,22\ldots\ mm^3$

$= 75\,398,22\ldots \div (10)^3\ cm^3$

$= 75,398\,22\ldots$

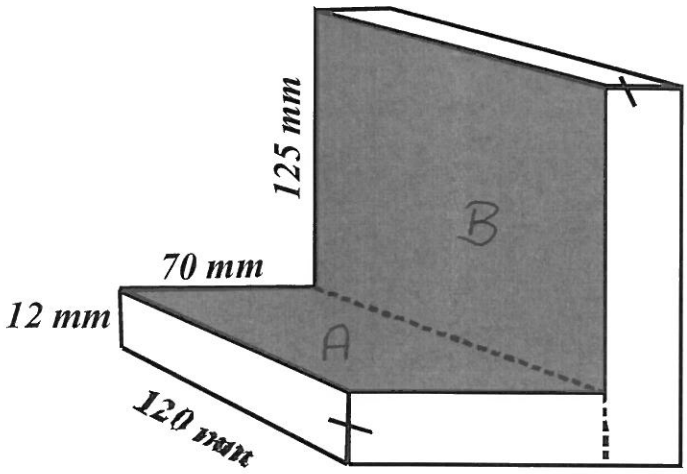
$\approx 75,4\ cm^3$

(6) (a) Calculate the volume of the prism on the right in mm^3.

(b) Calculate the volume of the prism on the right in cm^3.

(c) Calculate the total surface area of the shaded part of the prism, in mm^2.

(d) If the prism in the sketch is casted from metal, with 1 cm^3 = 250 gram, calculate the Total weight of the prism in kg.



(a) Volume A

= L x B x H

= (120 mm) x (70mm) x (12 mm)

= 100 800 mm^3

Volume B

= L x B x H

= (120 mm) x (12mm) x (12 + 125)

= 197 280 mm^3

∴ Total volume

= 100 800 + 197 280 mm^3

= 298 080 mm^3

(b) Volume

= 298 080 ÷ $(10)^3$ cm^3

= 298, 08 cm^3

(c) Area $A = L \times B$

$= 120\ mm \times 70\ mm$

$= 8\,400\ mm^2$

Area $B = L \times B$

$= 125\ mm \times 120\ mm$

$= 15\,000\ mm^2$

$\therefore$ Total area $= 8\,400 + 15\,000$

$= 23\,400\ mm^2$

(d) $V = 298,08\ cm^3$ [see (b)]

$\therefore$ Weight $= 298,08 \times 250$ gram

$= 74\,520$ gram

$= 74\,520 \div 1000$ kg

$= 74,52$ kg