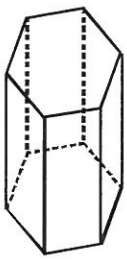
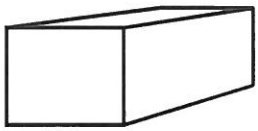
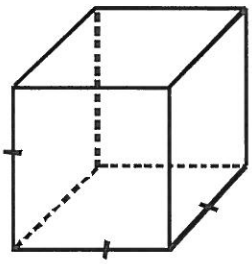
Worksheet 2015-8ŁQ-00006(1)

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

Hexahedron	Triangular prisms	Octahedron
Cone	Rectangular pyramid	Tetrahedron
Rectangular prisms		

(a) 

(b) 

(c) 

Octahedron Rectangular prism Hexahedron

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

(a) 3 000 mm^3 (liter)

$= 3000 \div (10)^3\ cm^3$

$= 3\ cm^3$

$= 3 \div 1000\ \ell$

$= 0,003\ \ell$

(b) 0,1 cm^2 (mm^2)

$= 0,1 \times 10^2\ mm^2$

$= 10\ mm^2$

(c) 1,345 mm^2 (cm^2)

$= 1,345 \div 10^2\ cm^2$

$= 0,01345\ cm^2$

(d) 1,3 ha (m^2)

$= 1,3 \times 10\,000\ m^2$

$= 13\,000\ m^2$

(e) 33 m^3 (cm^3)

$= 33 \times (100)^3\ cm^3$

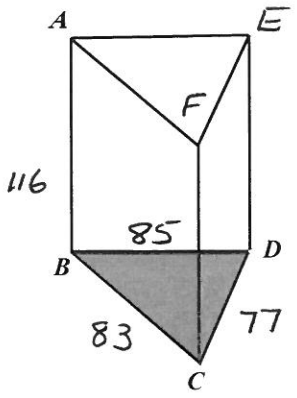
$= 33\,000\,000\ cm^3$

(f) 1 mm^3 (m^3)

$= 1 \div (1\,000)^3\ m^3$

$= 0,000000001\ m^3$

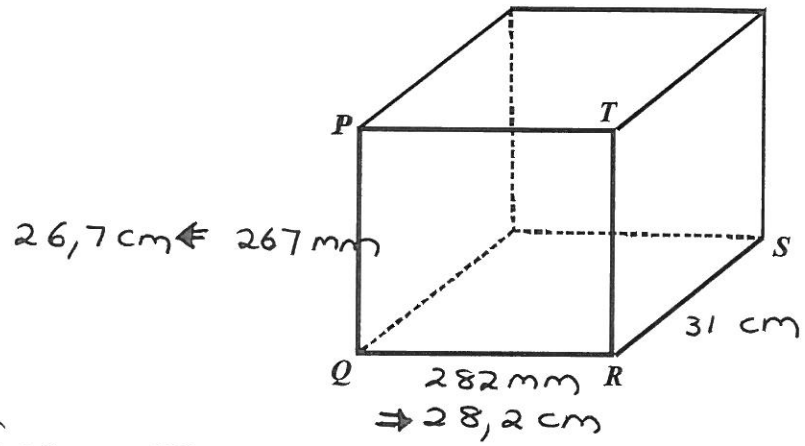
(3) Calculate the surface area of the following, correct to 2 dec:
Give the answer in cm².



AB = 116 cm, BC = 83 cm,
CD = 77 cm and BD = 85 cm.
Area ΔBCD = 1 763,75 cm².

Surface area
= ΔAEF + Δ BDC + ABCF + CDEF + ABDE
= 1 763,75 + 1763,75 + L x B + L x B + L x B
= 3527,5 + (116) x (83) + (116) x (77) + (116) x (85)
= 3 527,5 + 9 628 + 8 932 + 9 860
= 31 947,5 cm²

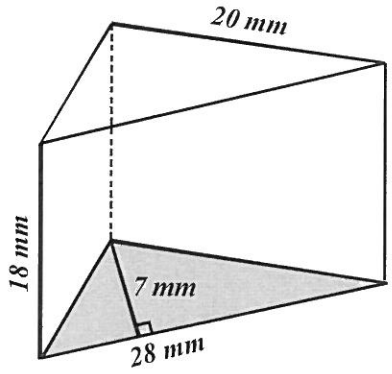
(b) PQ = 267 mm, QR = 282 mm and RS = 31 cm.



Surface area
= 2 [L x B + B x H + H x L]
= 2 [31cm x 28,2 cm + 28,2 cm x 26,7cm + 26,7cm x 31cm]
= 2 [874,2 cm² + 752,94 cm² + 827,7 cm²]
= 2 [2 454,84 cm²]
= 4 909,68 cm²

(4) Calculate the volume, correct to 2 dec, of each of the following.
Also give the volume in cm^3.

(a)



Volume

$= \text{Area of base} \times H$

$= [\frac{1}{2} b \times \perp h \times H$

$= [\frac{1}{2} \times 28mm \times 7mm] \times 18mm$

$= 98 mm^2 \times 18 mm$

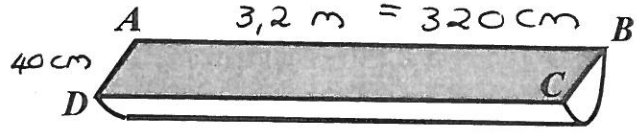
$= 1764 mm^3$

$= 1764 \div (10)^3 cm^3$

$= 1,764 cm^3$

$\approx 1,76 cm^3$

(b) AB = 3,2 m and AD = 40 cm



Volume

$= \frac{1}{2}$ Cylinder

$= \frac{1}{2} (\pi r^2 H)$

$= \frac{1}{2} (\pi (20)^2 \times 320)$

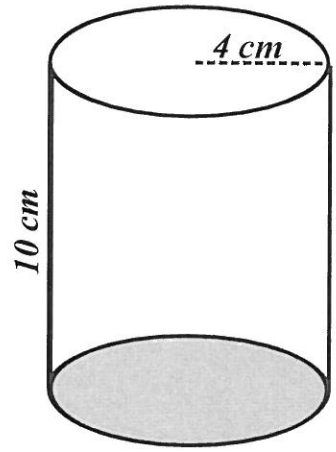
$= 201\,061,9298 cm^3$

$\approx 201\,061,93 cm^3$

$\therefore d = 40cm$

$\therefore r = 20cm$

(5) Cans with dimensions as in the sketch, are manufactured from tin. The cans are open on the upper side. Round off correct to the nearest integer.



(a) Calculate the surface area of the can.
(b) Calculate the volume of the can in cm^3.
(c) If 1 litre = 1 000 cm^3, calculate how many ml of water is needed to fill the can.

(a) Surface area

$= 2\pi r^2 + 2\pi r H - \pi r^2$ ← Topsicle open ∴ one circle −!

$= 1\pi r^2 + 2\pi r H$

$= \pi(4cm)^2 + 2\pi(4cm)(10cm)$

$= 301,592\ldots$

$\approx 302\ cm^2$

(b) Volume $= \pi r^2 H = \pi(4cm)^2(10cm)$

$= 502,654\ldots$

$\approx 503\ cm^3$

(c) $503\ cm^3 = \frac{503}{1000} = 0,503\ l$

$= 0,503 \times 1000\ ml$

$= 503\ ml$

(6) Match the two columns:

	Column A			Column B
(a)	Hexahedron	Q	M ✓	All 8 faces are equilateral triangles
(b)	Polyhedron	N	N ✓	Multiple faces
(c)	Octahedron	M	P ✓	All 4 faces are equilateral triangles
(d)	Tetrahedron	P	Q ✓	Cube