

Worksheet

12/06/2020

Free on dw-math.com

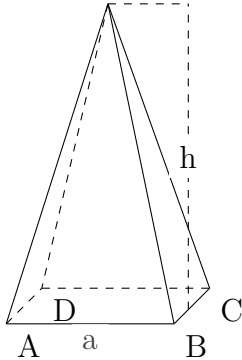
Problem quickname: 2200

1)

State the formulas for the required metrics of the given shape.

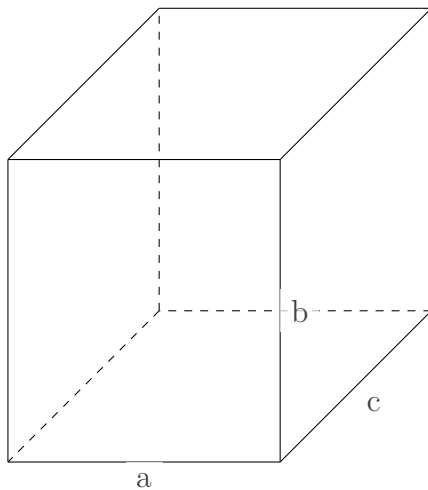
Quick:
2200

a)



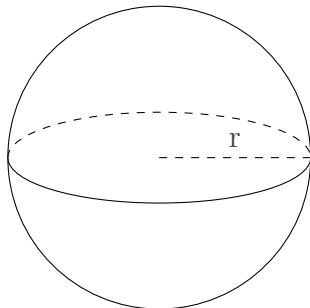
This is a square pyramid. The base of this shape is formed by a square. We have $a=5$ mm, $h=9$ mm. The volume is: $V = \frac{1}{3} \cdot a^2 \cdot h = 75 \text{ mm}^3$.

b)



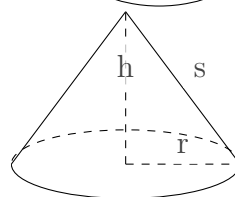
This is a cuboid. We have $a=9$ cm, $b=10$ cm, $c=10$ cm. The volume is: $V = a \cdot b \cdot c = 900 \text{ cm}^3$.

c)



This is a sphere. We have $r=7$ cm. The volume is: $V = \frac{4}{3} \cdot \pi \cdot r^3 = 1436 \text{ cm}^3$.

d)



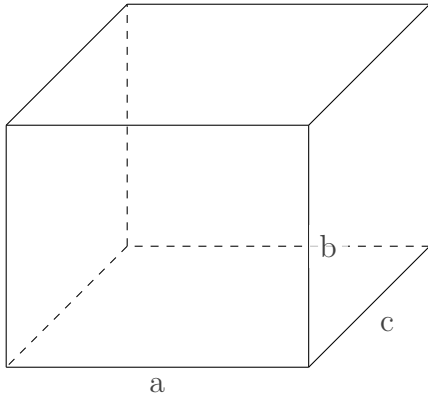
This is a cone. We have $h=56$ cm, $s=70$ cm, $r=42$ cm. The volume is: $V = \frac{1}{3} \cdot \pi \cdot r^2 \cdot h = 103393 \text{ cm}^3$.

2)

Quick:
2200

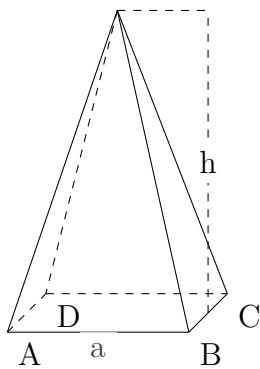
Calculate the approximate values of the shapes metrics as requested.

a)



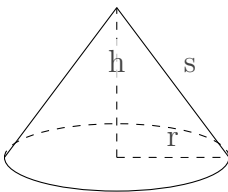
This is a cuboid. We have $a=5$ mm, $b=4$ mm, $c=4$ mm. The surface area is: $A = 2 \cdot (a \cdot b + b \cdot c + a \cdot c) = 120$ mm².

b)



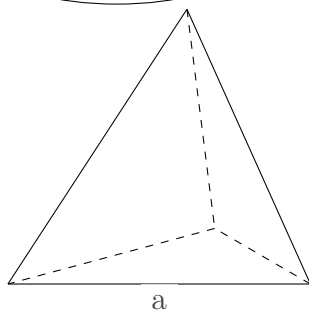
This is a square pyramid. The base of this shape is formed by a square. We have $a=12$ mm, $h=2$ cm. The volume is: $V = \frac{1}{3} \cdot a^2 \cdot h = 960$ mm³.

c)



This is a cone. We have $h=6$ cm, $s=7$ cm, $r=4$ cm. The surface area is: $A = r \cdot \pi \cdot (r + s) = 69$ cm² 56 mm².

d)



This is a regular tetrahedron. All edges are of the same length with $a=1$ cm. The volume is: $V = \frac{a^3}{12} \cdot \sqrt{2} = 117$ mm³.

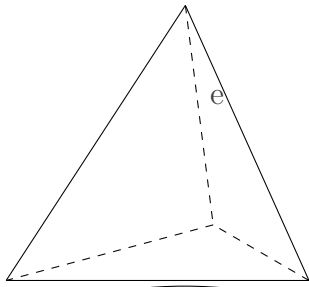
3)

Quick:
2200

State the formulas for the required metrics of the given shape and calculate their

approximate values.

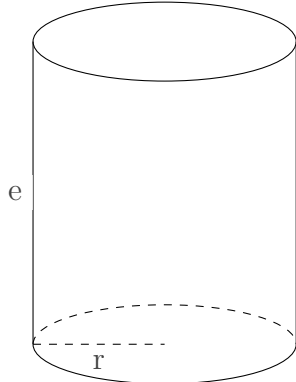
a)



This is a regular tetrahedron. All edges are of the same length with $e = 11$. The surface area is:

$$A = e^2 \cdot \sqrt{3} = 210. \text{ The volume is: } V = \frac{e^3}{12} \cdot \sqrt{2} = 157.$$

b)

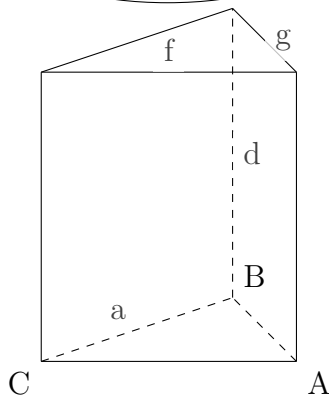


This is a cylinder. The base of this shape is formed by a circle. We have $r = 10$, $e = 23$. The surface area is:

$$A = 2 \cdot \pi r^2 + 2 \cdot \pi \cdot r \cdot e = 2072. \text{ The volume is:}$$

$$V = \pi \cdot r^2 \cdot e = 7222.$$

c)

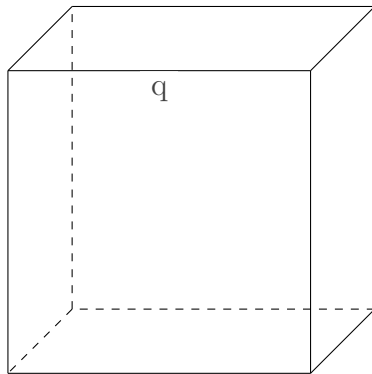


This is a prism. The base of this shape is formed by a triangle ABC which has an area of $A(\text{triangle})=630$. We

have $a = 28$, $f = 45$, $g = 53$, $d = 51$. The surface area is:

$$A = 2 \cdot A(\text{triangle}) + d \cdot (a + f + g) = 7686. \text{ The volume is: } V = A(\text{triangle}) \cdot d = 32130.$$

d)



This is a cube. All edges of the shape are of the same length with $q = 23$. The surface area is:

$$A = 6 \cdot q^2 = 3174. \text{ The volume is: } V = q^3 = 12167.$$

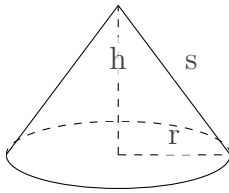
4)

State the formulas for the required metrics of the given shape and calculate their

Quick:
2200

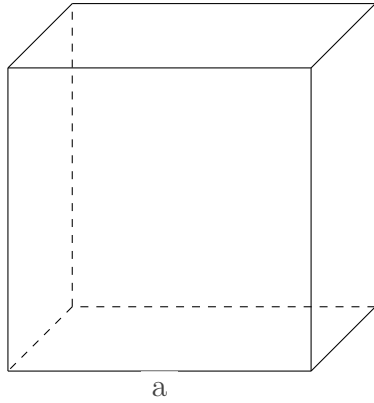
approximate values.

a)



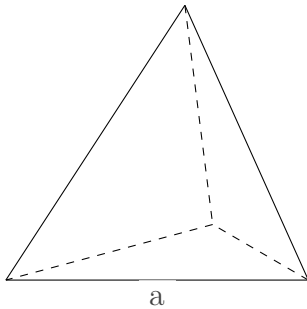
This is a cone. We have $h=52$ m, $s=65$ m, $r=39$ m. The surface area is: $A = r \cdot \pi \cdot (r + s) = 12735$ m². The volume is: $V = \frac{1}{3} \cdot \pi \cdot r^2 \cdot h = 82782$ m³.

b)



This is a cube. All edges of the shape are of the same length with $a=19$ mm. The surface area is: $A = 6 \cdot a^2 = 2166$ mm². The volume is: $V = a^3 = 6859$ mm³.

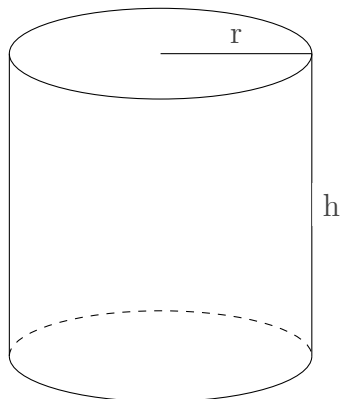
c)



This is a regular tetrahedron. All edges are of the same length with $a=8$ cm. The surface area is:

$A = a^2 \cdot \sqrt{3} = 110$ cm². The volume is: $V = \frac{a^3}{12} \cdot \sqrt{2} = 60$ cm³.

d)



This is a cylinder. The base of this shape is formed by a circle. We have $r=8$ cm, $h=16$ cm. The surface area is: $A = 2 \cdot \pi r^2 + 2 \cdot \pi \cdot r \cdot h = 1205$ cm². The volume is: $V = \pi \cdot r^2 \cdot h = 3215$ cm³.

Good Luck!