# Curriculum Outcome

(N5) Determine the square root of positive rational numbers that are perfect squares.

(N6) Determine an approximate square root of positive rational numbers that are non-perfect squares.

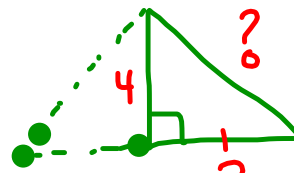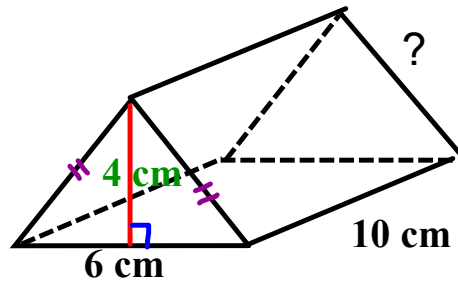(SS2) Determine the surface area of composite 3-D objects to solve problems

(N4) **Explain and apply the order of operations, including exponents, with and without technology.**
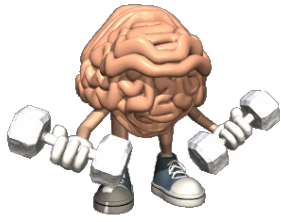
Grade 9 Warm Up
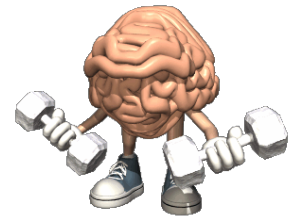
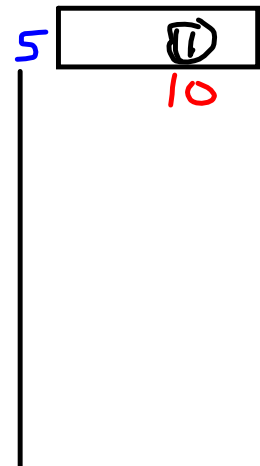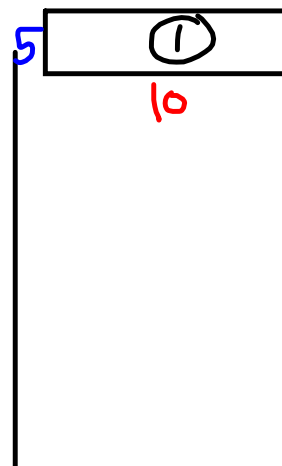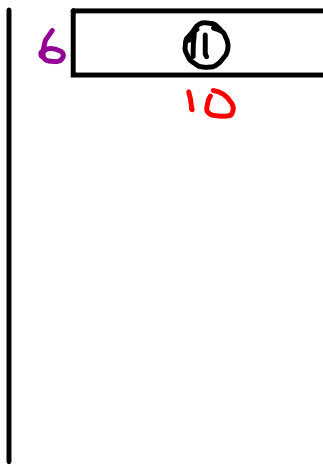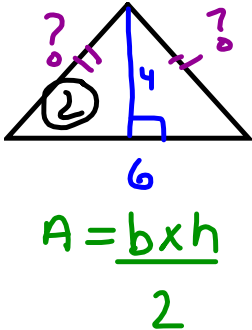Calculate the total surface area of the following: (Show all work)

$$c^2 = a^2 + b^2$$
$$c^2 = 3^2 + 4^2$$
$$c^2 = 25$$
$$c = 5$$
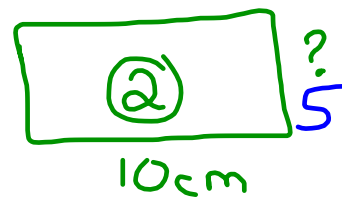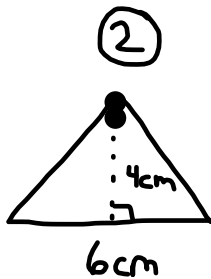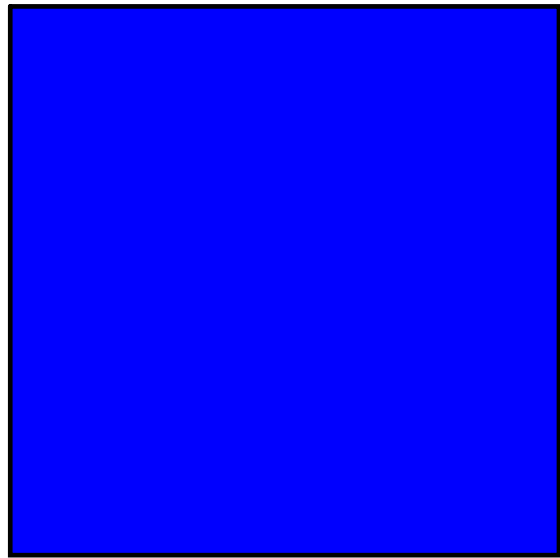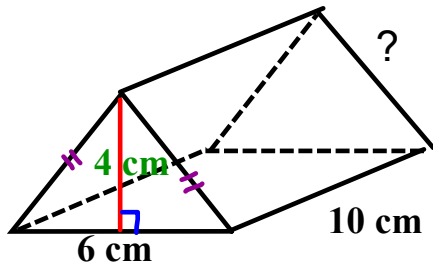
$$A = \frac{b \times h}{2}$$

? (triangular prism)

4 cm
6 cm
10 cm

②

4cm
6cm

6cm ⟶ (rectangle) 10cm
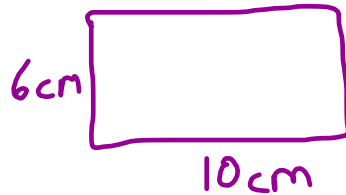
② (rectangle) 10cm ?5

$A_1 = \dfrac{b \times h}{2}$

$A = \dfrac{6\,cm \times 4\,cm}{2}$

$A_1 = 12\,cm^2$

$2A_1 = 24\,cm^2$

$A_2 = b \times h$

$A_2 = 6\,cm \times 10\,cm$

$A_2 = 60\,cm^2$

$A_3 = b \times h$

$= 10\,cm \times 5\,cm$

$= 50\,cm^2$

$2A_3 = 100\,cm^2$

$T_{SA} = 2A_1 + A_2 + 2A_3$

$= 24\,cm^2 + 60\,cm^2 + 100\,cm^2$

$= 184\,cm^2$

Cubes

1cm

Number of Faces: ___6___

2 cm
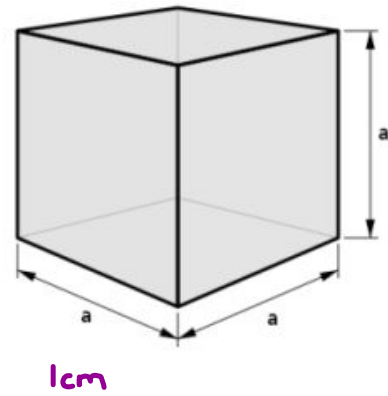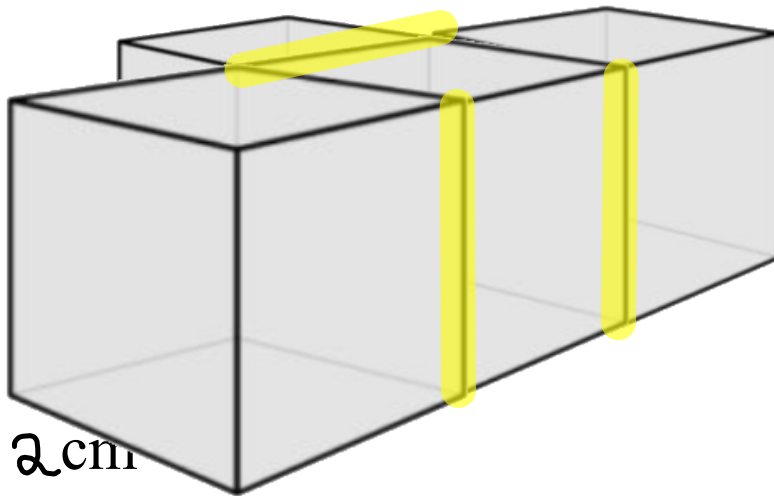
4 cubes × 6 faces

= 24 faces − 3 overlap

= 24 faces − 6 faces

= 18 faces

× 4 cm²

$T_{SA} = 72 cm^2$

2

2

A = b × h
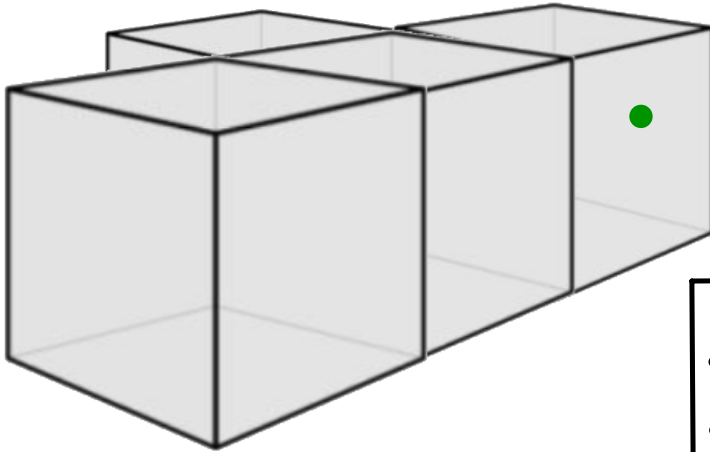
A = 2 × 2

A = 4 cm²

5
5
3
5
2 cm
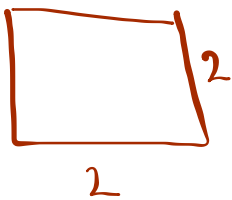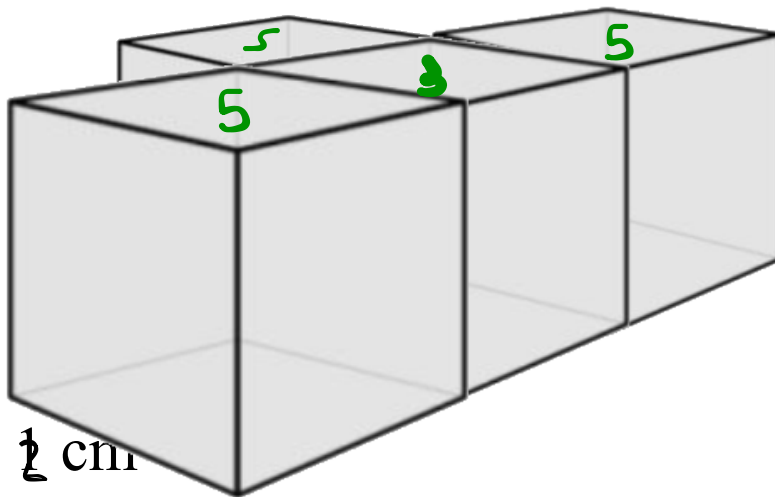
Find the Surface Area of the Connected Cubes

1 cm
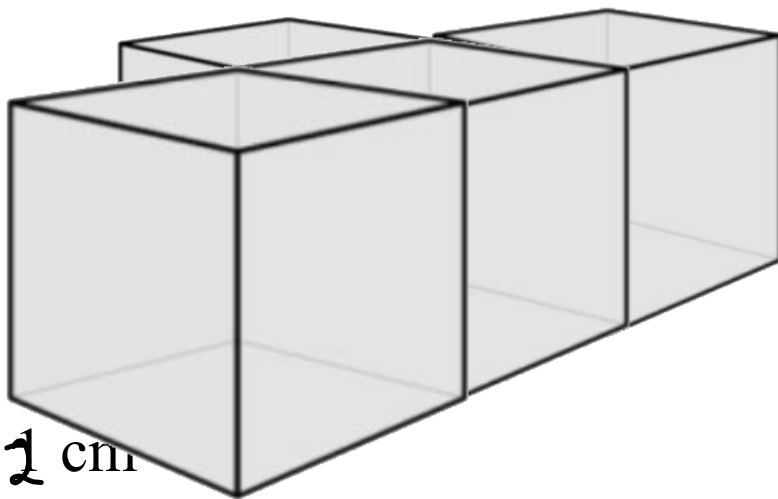
Method 2: (Visualize the top/bottom, front/back, side/side)

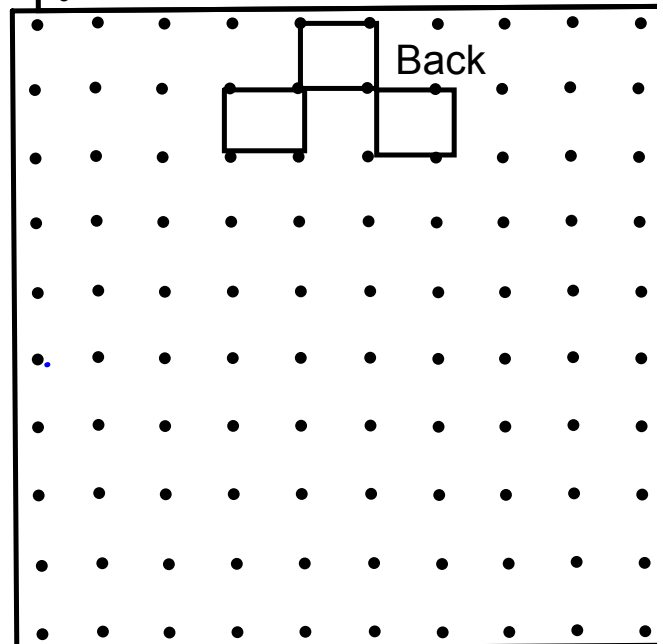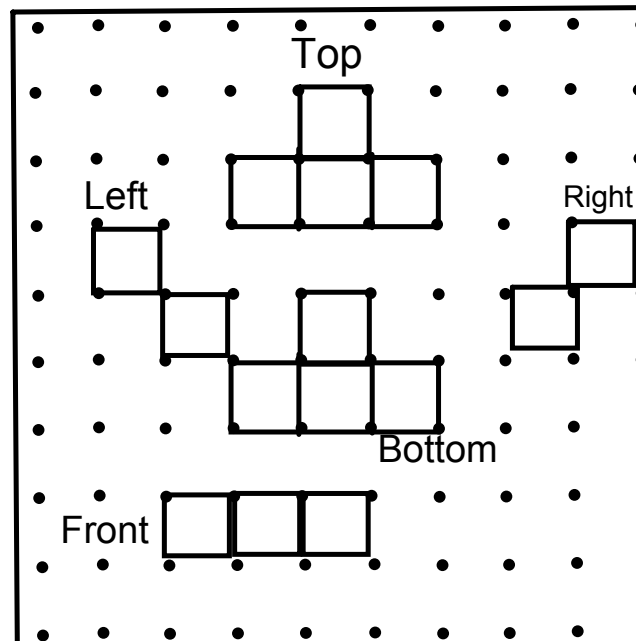How many faces do we see on the top?
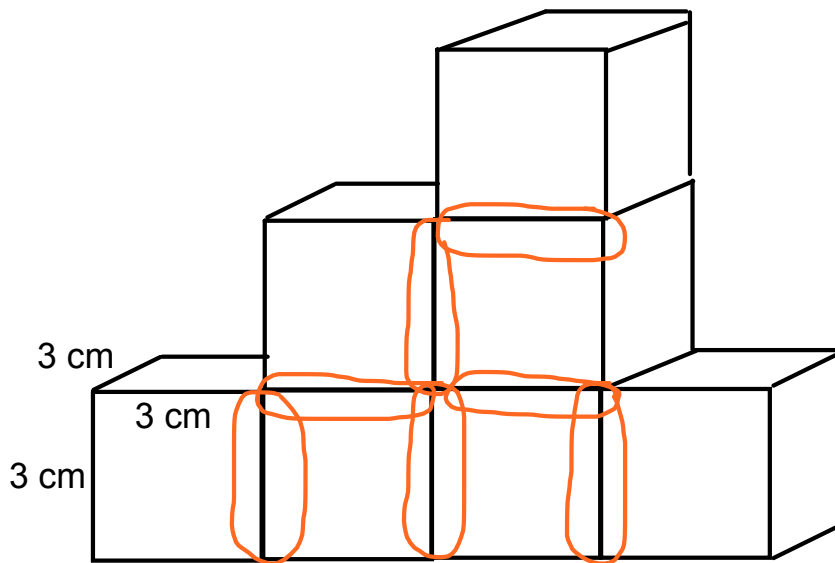
How many faces do we see on the bottom?

How many faces do we see on the front?

How many faces do we see on the back?

How many faces do we see on the left side?

How many faces do we see on the right side?

Top

Left

Right

Bottom

Front

Back

3 cm
3 cm
3 cm

7cube × 6faces

42faces — 7overlaps

42faces — (14faces)

28faces

$$\boxed{①} 3$$
$$\frac{}{3}$$
$$A = 9cm^2$$
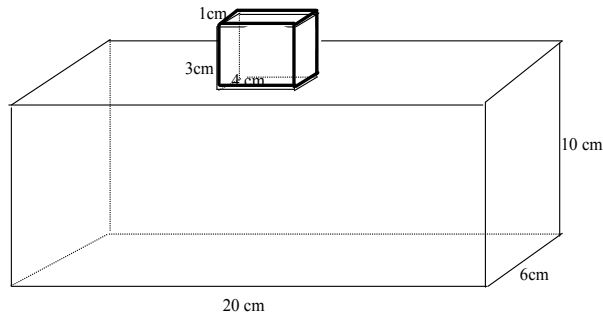
$$\times 9cm^2$$
$$\overline{}$$
$$252cm^2$$
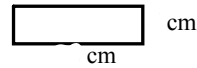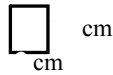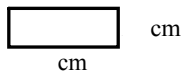
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questions
4abde,

Determine the surface area of the composite object.

What effect does the overlap have on the calculation of the surface area?

*count bottom

1cm
3cm
4 cm
10 cm
6cm
20 cm

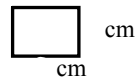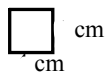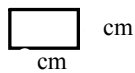STEP 1: You can calculate all of the surface areas of the larger
          rectangular prism

     cm   cm   cm

  cm   cm   cm

Step 2: Then calculate all of the surface areas of the smaller rectangular
       prisms

     cm   cm   cm

  cm   cm   cm

Step 3: Is there an overlap? SO must subtract the "overlapped Areas"
           recall overlap involves "two faces"

                            subtract 2 x (overlap area)