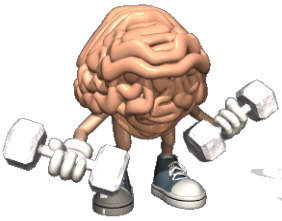
Curriculum Outcome

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

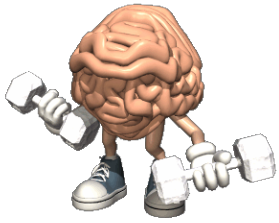
(N6) Determine an approximate square root of positive rational numbers that are non-perfect squares.

(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



Quiz

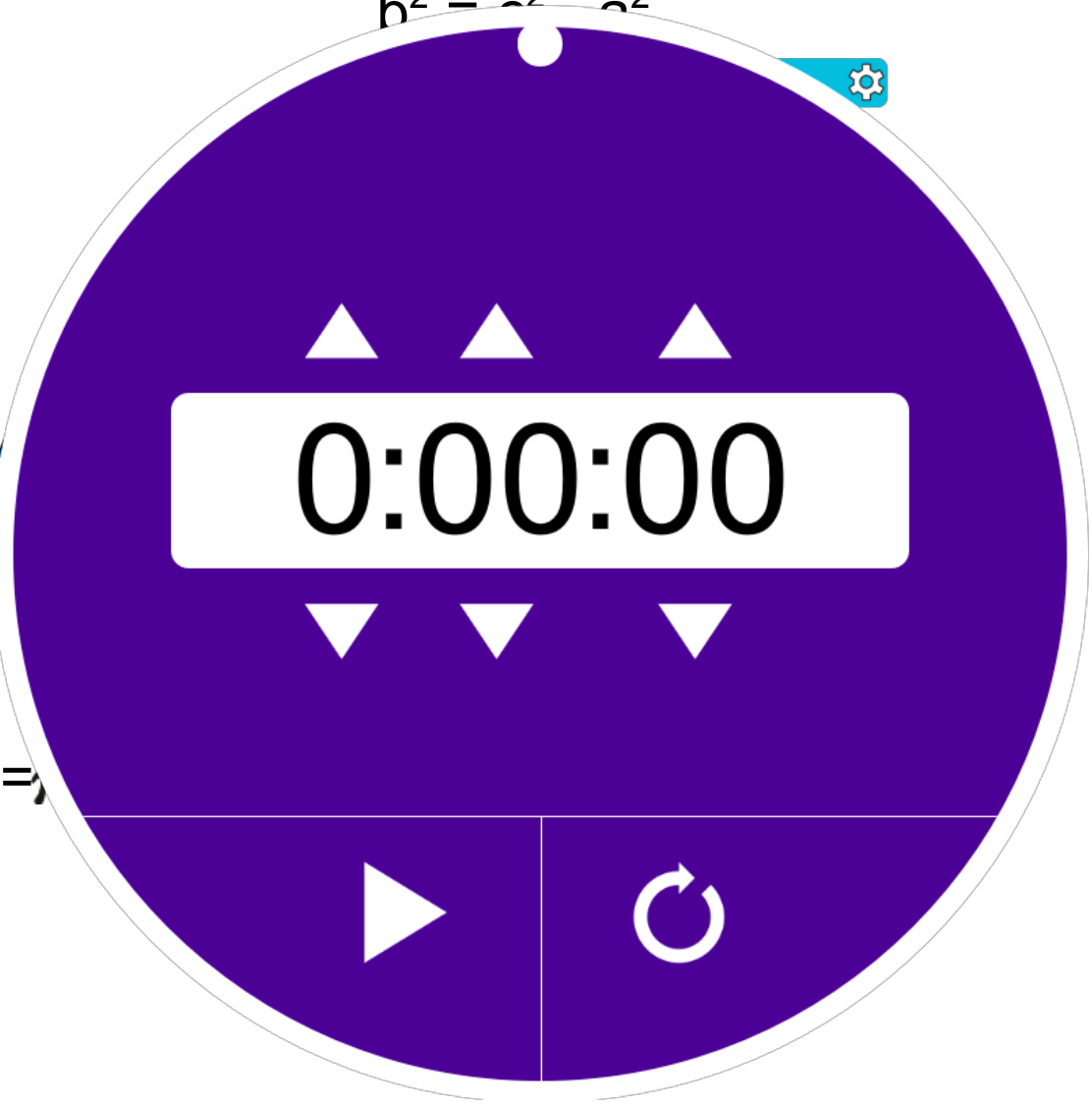
Remember:

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

$b^2 = c^2 - a^2$

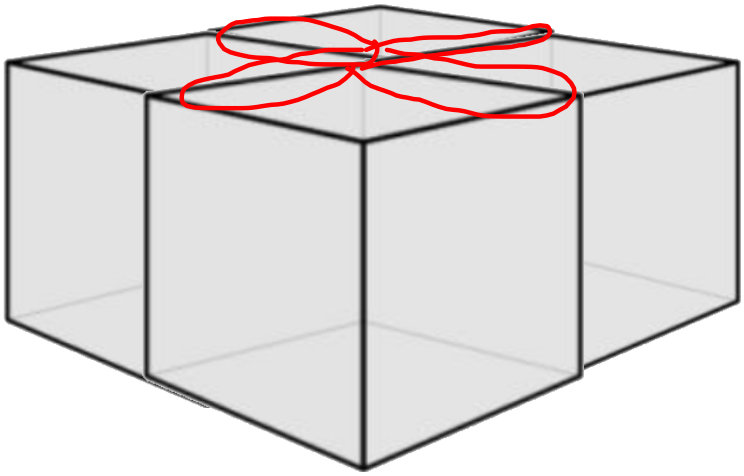
a)

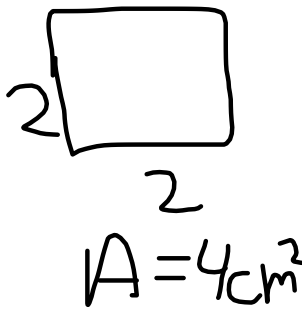
SA=



Warm Up Grade 9

Find the Surface Area of This Composite Object.
Each cube has edge length of 2 cm.





4 cube x 6 faces

= 24 faces − (4 overlap)

24 faces − 8 faces

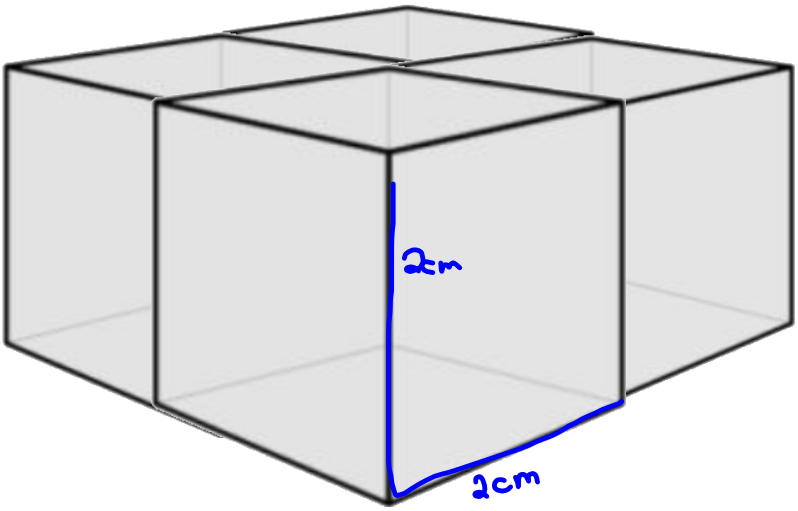
= 16 faces

× 4 cm²

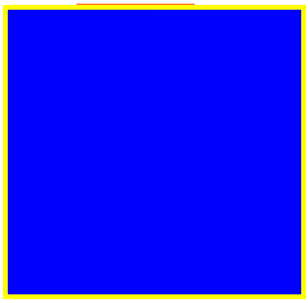
TSA = 64 cm²

Warm Up Grade 9

Find the Surface Area of This Composite Object.
Each cube has edge length of 2 cm.



1 face



4 Cubes

Total number of faces = 6 x 4 = 24 faces

# of overlaps = 4 ⟶ 8 faces

Total Area of all cubes = 24 faces - overlap faces
= 24 - 8

= 16 Faces

Total SA = 16 Faces x Area of one face
= 16 x 4 cm^2
= 64 cm^2

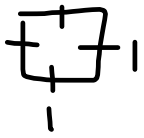
page 30 & 31

questions
4abde

Homework Solutions
Page 30

$A = b \times h$

$A = 1 \times 1\ cm^2$



4a) **Area of a single face = 1 unit²**

# of cubes = 3

Total number of faces = 6 x 3
= 18 faces

# of overlaps = 2 -----> 4 faces

18 faces - **4 faces** = 14 faces

Total SA = 14 faces x 1units² -
= 14 units²

4b) **Area of a single face = 1 unit²**

0f cubes = 4

Total number of faces = 6 x 4
= 24 faces

# of overlaps = 3 -----> 6 faces

24 faces - **6 faces** = 18 faces

Total SA = 18 Faces x 1 units²
= 18 units ²

4c) Area of a single face = 1 unit ²

0f cubes = 5

Total number of faces = 6 x 5
= 30 faces

# of overlaps = 4 -----> 8 faces

30 faces - 8 **faces** = 22 faces

Total SA = 22 Faces x 1 units²
= 22 units ²

4d) Area of a single face = 1 unit ²

0f cubes = 5

Total number of faces = 6 x 5
= 30 faces

# of overlaps = 5 -----> 10 faces

30 faces - 10 **faces** = 20 faces

Total SA = 20 Faces x 1 units²
= 20 units ²

Homework Solutions
Page 30 continued...

4e) Area of a single face = 1 unit^2

0f cubes = 5

Total number of faces = 6 x 5
= 30 faces

# of overlaps = 4 -------> 8 Faces

30 faces - 8 **faces** = 22 faces

Total SA = 22 faces x 1units^2 -
= 22 units^2

4f) Area of a single face = 1 unit^2

0f cubes = 6

Total number of faces = 6 x 6
= 36 faces

# of overlaps = 5 -------> 10 Faces

36 faces - 10 **faces** = 26 faces

Total SA = 26 faces x 1units^2 -
= 26 units^2

# of cubes = 4

5i) Area of a single face = L x W
= 1 X 1
= 1 unit^2

Total number of faces = 6 x 4 = 24 faces

# of overlaps = 3

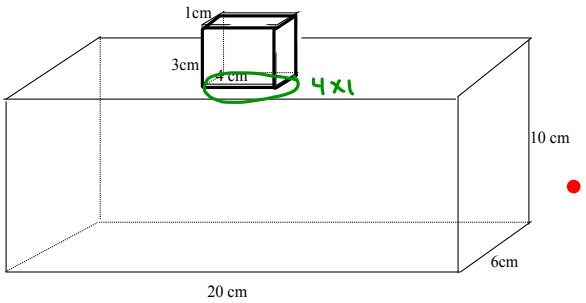
Total Area of all cubes = 24 faces - 2 (overlap)
= 24 - 2 (3)
= 24 - 6
= 18 Faces

Total SA = 18 Faces x Area of one face
= 18 x 1 unit^2
= 18 units ^{2}

Determine the surface area of the composite object.

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

*count bottom



STEP 1: You can calculate all of the surface areas of the larger rectangular prism 20, 6, 10

2 6 cm
20 cm

A = bxh
A = 6x20
A = 120cm²
2A = 240cm²

2 10 cm
6 cm

A = bxh
A = 6x10
A = 60
2A = 120cm²

2 10cm
20 cm

A = bxh
A = 20x10
A = 200
2A = 400cm²

$SA_{big} = 240 + 120 + 400$
$= 760 cm^2$

Step 2: Then calculate all of the surface areas of the smaller rectangular prisms 3, 4, 1

2 4 cm
3 cm

A = bxh
A = 3x4
A = 12cm²
2A = 24cm²

2 1 cm
4 cm

A = bxh
A = 4x1
A = 4
2A = 8cm²

overlap

2 3cm
1 cm

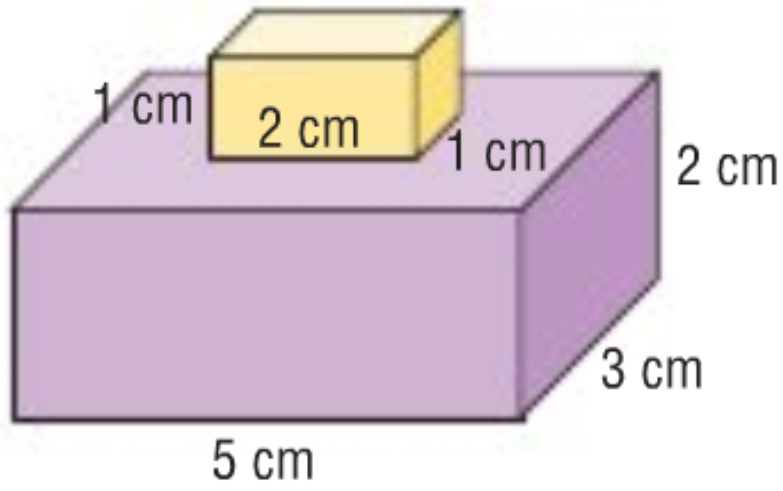
A = bxh
A = 3x1
A = 3
2A = 6cm²

$SA_{sm} = 24 + 6 + 8$
$= 38 cm^2$

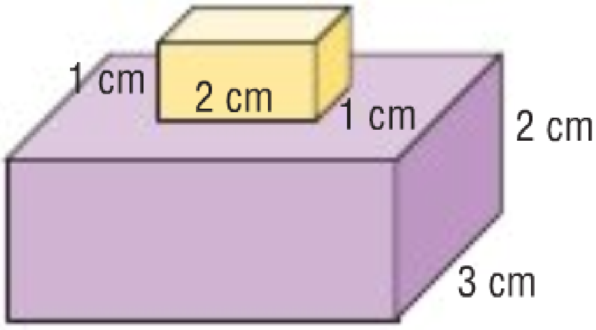
Step 3: Is there an overlap? SO must subtract the "overlapped Areas"
recall overlap involves "two faces"
subtract 2 x (overlap area)

$T_{SA} = SA_{big} + SA_{sm} - overlap$
$= 760 + 38 - 8$
$= 790 cm^2$

a)



a)



Big: (5, 3, 2)

2 × 3, 5	2 × 2, 3	2 × 2, 5
A = b × h	A = b × h	A = b × h
A = 5 × 3	A = 3 × 2	A = 5 × 2
A = 15	A = 6	A = 10
2A = 30 cm^2	2A = 12 cm^2	2A = 20 cm^2

SA = 30 + 12 + 20
SA = 62 cm^2

small: (1 × 2 × 1)

2 × 2, 1	2 × 1, 2	2 × 1, 1
A = b × h	A = b × h	A = b × h
A = 1 × 2	A = 1 × 2	A = 1 × 1
A = 2	A = 2	A = 1
2A = 4 cm^2	2A = 4 cm^2	2A = 2 cm^2

SA_2 = 4 + 4 + 2
= 10 cm^2

TSA = SA_1 + SA_2 − overlap
= 62 + 10 − 4
= 68 cm^2