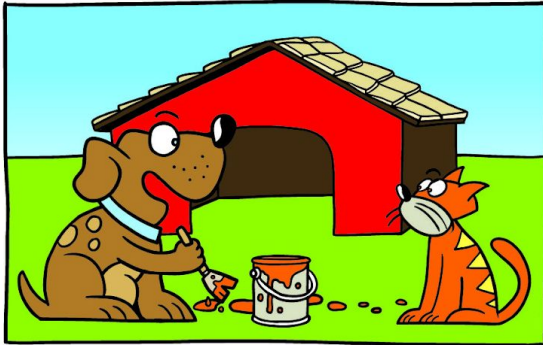


Identifying faces to calculate surface area



"I want to paint my dog house. To make sure I buy the correct amount of paint, I want to calculate the lateral surface area."

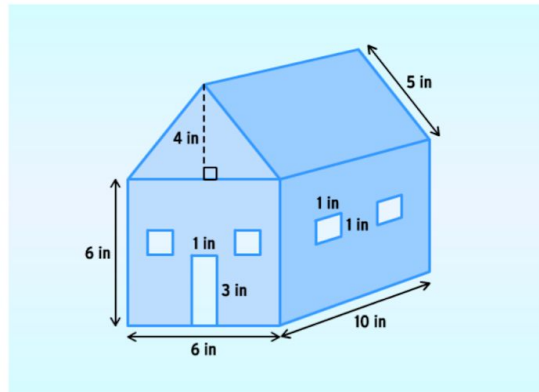


"Then, because I want to paint the inside and the outside, I will multiply by 2. Does this seem right to you?"

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Solve It

Calculate the surface area of this dollhouse—minus windows, doors, and the floor. (All opposite sides are identical.) Remember to show your work.



Remember that the other side has identical features

<p>Window:</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>Door:</p> <p>_____</p> <p>_____</p> <p>_____</p>
<p>Roof:</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>Front/Back:</p> <p>_____</p> <p>_____</p> <p>_____</p>
<p>Side:</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>Total surface area:</p> <p>_____</p> <p>_____</p> <p>_____</p>

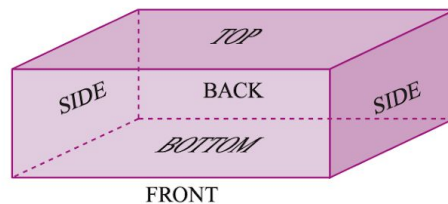
Something to do at home

Calculate it

Identify the objects and take notes about how to calculate the surface area. Make a list of your household objects and draw diagrams to help you calculate the surface area

When calculating the **surface area** of a solid, you need to be able to identify all faces along with their dimensions. This rectangular prism has three pairs of **corresponding faces**:

- two sides
- front and back
- top and bottom.



Corresponding faces are equal and parallel. !

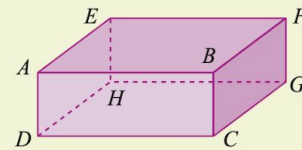
EXAMPLE 1

Find the pairs of corresponding faces, given that:

Front = $ABCD$

Side = $BFGC$

Bottom = $DHGC$



Given

Front = $ABCD$

Side = $BFGC$

Bottom = $DHGC$

Corresponding face

Back = $EFGH$

Side = $AEHD$

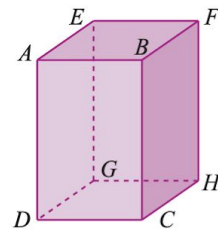
Top = $AEFB$

1 Find each corresponding face, given that:

a Front = $ABCD$

b Side = $BFHC$

c Top = $AEFB$



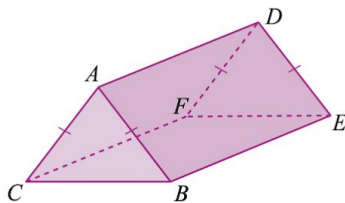
2 For each triangular prism shown:

i Identify the remaining faces, given that the front = ABC .

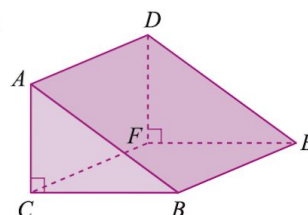
ii Which faces are corresponding?

iii Which faces are equal?

a

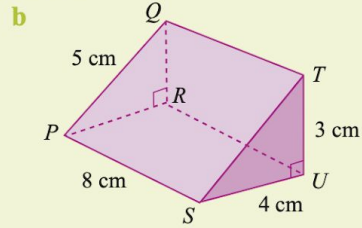
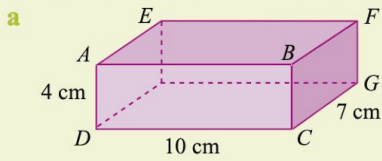


b



EXAMPLE 2

Using the diagram, state the dimensions of each face in a table.



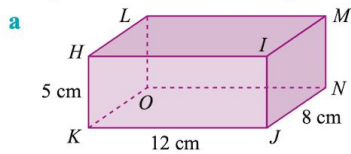
a

Face	Length	Breadth
<i>ABCD</i>	10 cm	4 cm
<i>EFGH</i>	10 cm	4 cm
<i>AEHD</i>	7 cm	4 cm
<i>BFGC</i>	7 cm	4 cm
<i>AEFB</i>	10 cm	7 cm
<i>DHGC</i>	10 cm	7 cm

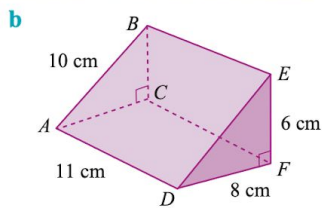
b

Face	Base	Height
<i>PQR</i>	4 m	3 m
<i>STU</i>	4 m	3 m
Face	Length	Breadth
<i>PQTS</i>	8 m	5 m
<i>QTUR</i>	8 m	3 m
<i>PRUS</i>	8 m	4 m

3 Complete the tables for the diagrams shown.



Face	Length	Breadth
<i>LMNO</i>		
<i>HIJK</i>		
<i>IMNJ</i>		
<i>HLOK</i>		
<i>HLMI</i>		
<i>KONJ</i>		



Face	Base	Height
<i>ABC</i>		
<i>DEF</i>		
Face	Length	Breadth
<i>ABED</i>		
<i>BEFC</i>		
<i>ACFD</i>		

Check your answers

- 1 a Back = $EFHG$ b Side = $AEGD$
 c Bottom = $DGHC$
- 2 a i Back = FDE , side 1 = $ADFC$, side 2 = $ADEB$,
 bottom = $CFEB$
 ii Front and back
 iii Front and back, side 1 and side 2

- b i Back = DEF , side 1 = $ADFC$, side 2 = $ADEB$,
 bottom = $CFEB$
 ii Front and back iii Front and back

3 a

Face	Length	Breadth
$LMNO$	12 cm	5 cm
$HIJK$	12 cm	5 cm
$IMNJ$	8 cm	5 cm
$HLOK$	8 cm	5 cm
$HLMI$	12 cm	8 cm
$KONJ$	12 cm	8 cm

b

Face	Base	Height
ABC	8 cm	6 cm
DEF	8 cm	6 cm
Face	Length	Breadth
$ABED$	11 cm	10 cm
$BEFC$	11 cm	6 cm
$ACFD$	11 cm	8 cm