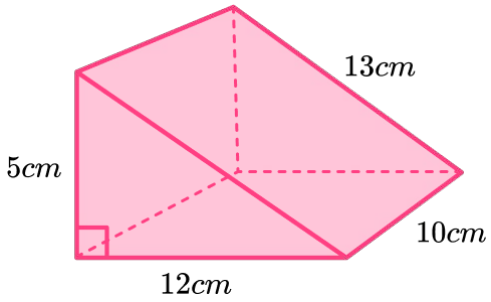
THIRD SPACE LEARNING

GCSE Exam Questions

Surface Area of Triangular Prisms | Geometry & Measure

GCSE Exam Questions: Surface Area of Triangular Prisms

1) This diagram shows a triangular prism.

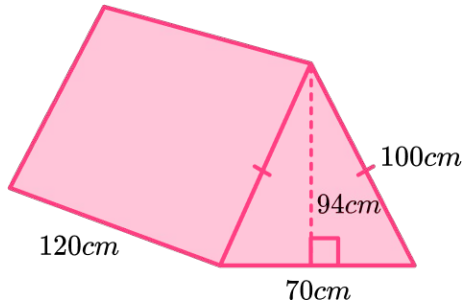


Find the total surface area of the triangular prism.

_____

(3 marks)

2) This diagram shows a box which is a triangular prism.



5 of these boxes are going to be painted.

Each pot of paint can cover $6m^2$.

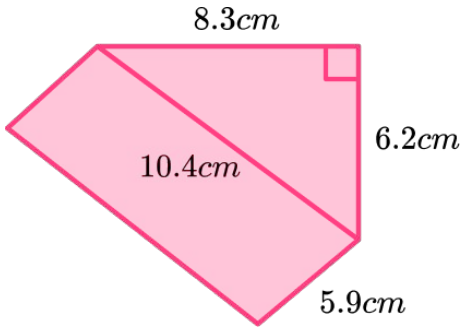
How many pots of paint are needed to paint the 5 boxes?

_____ tins

(5 marks)

GCSE Exam Questions: Surface Area of Triangular Prisms

3) **(a)** This diagram shows a triangular prism.



Estimate the total surface area of the triangular prism.

_____ cm^2

(3)

(b) Is your answer an underestimate or an overestimate?

Explain your answer.

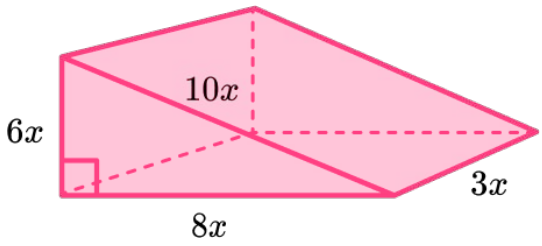
_____

(1)

(4 marks)

GCSE Exam Questions: Surface Area of Triangular Prisms

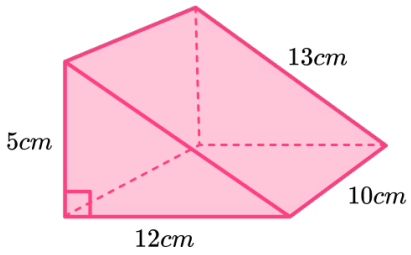
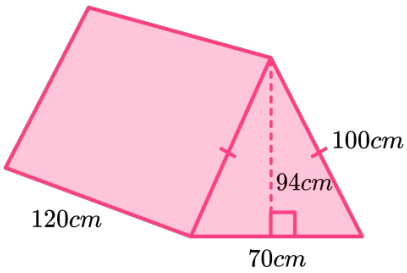
4) This diagram shows a triangular prism.



Write an expression to represent the surface area of the triangular prism.

(3 marks)

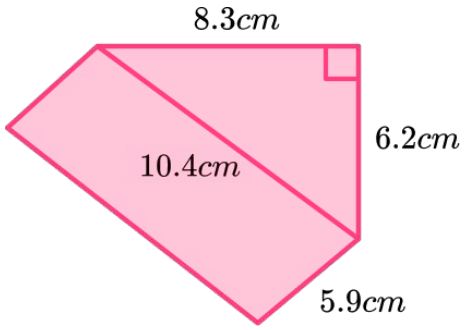
GCSE Exam Questions: Surface Area of Triangular Prisms Answers

<table>
<tr><th></th><th>Question</th><th>Answer</th><th>Marks</th></tr>
<tr><td>1)</td><td>This diagram shows a triangular prism.
Find the total surface area of the triangular prism.
 
</td><td>
<table>
<tr><th>Face</th><th>Calculation</th><th>Area</th></tr>
<tr><td>Triangles</td><td>0.5 × 12 × 5</td><td>30 × 2 = 60</td></tr>
<tr><td>Base</td><td>12 × 10</td><td>120</td></tr>
<tr><td>Side</td><td>5 × 10</td><td>50</td></tr>
<tr><td>Side</td><td>13 × 10</td><td>130</td></tr>
<tr><td>Total</td><td>60 + 120 + 50 + 130</td><td>360cm²</td></tr>
</table>
Area of the triangles
Area of the 3 rectangles
Correct total surface area</td><td>(1)
(1)
(1)</td></tr>
<tr><td>2)</td><td>This diagram shows a box which is a triangular prism.
5 of these boxes are going to be painted.
Each pot of paint can cover $6m^2$.
How many pots of paint are needed to paint the 5 boxes?
 
</td><td>
<table>
<tr><th>Face</th><th>Calculation</th><th>Area</th></tr>
<tr><td>Triangles</td><td>0.5 × 0.7 × 0.94</td><td>0.329 × 2 = 0.658</td></tr>
<tr><td>Base</td><td>0.7 × 1.2</td><td>0.84</td></tr>
<tr><td>Sides</td><td>1 × 1.2</td><td>1.2 × 2 = 2.4</td></tr>
<tr><td>Total</td><td>0.56 + 0.84 + 2.4</td><td>3.898m²</td></tr>
</table>
Area of two faces correctly calculated
Total surface area
38 980 cm^2 or 3.898 m^2

Surface area of 5 boxes
$38980 \times 5 = 194\,900\ cm^2$
Or $3.898 \times 5 = 19.49\ m^2$
$194\,600 \div 60\,000 = 3.24\ldots$
$19.49 \div 6 = 3.24\ldots$

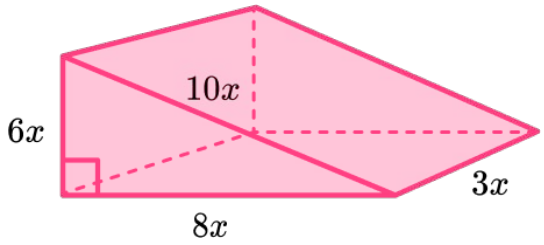
4 tins needed</td><td>(1)
(1)

(1)
(1)

(1)</td></tr>
<tr><td>3) (a)</td><td>This diagram shows a triangular prism.
 

Estimate the total surface area of the triangular prism.</td><td>(a)
<table>
<tr><th>Face</th><th>Calculation</th><th>Area</th></tr>
<tr><td>Triangles</td><td>0.5 × 8 × 6</td><td>24 × 2 = 48</td></tr>
<tr><td>Base</td><td>8 × 6</td><td>48</td></tr>
<tr><td>Side</td><td>10 × 6</td><td>60</td></tr>
<tr><td>Side</td><td>6 × 6</td><td>36</td></tr>
<tr><td>Total</td><td>48 + 48 + 60 + 36</td><td>192cm²</td></tr>
</table>
Side lengths rounded to 1 significant figure
Area of at least two faces calculated
Total surface area estimated</td><td>(1)
(1)
(1)</td></tr>
<tr><td>(b)</td><td>Is your answer an underestimate or overestimate? Explain your answer.</td><td>(b) Underestimate as all values have been rounded down</td><td>(1)</td></tr>
</table>

GCSE Exam Questions: Surface Area of Triangular Prisms

<table>
<tr><th></th><th>Question</th><th>Answer</th><th>Marks</th></tr>
<tr><td>4)</td><td>This diagram shows a triangular prism. Write an expression to represent the surface area of the triangular prism.
 
</td><td>
<table>
<tr><th>Face</th><th>Calculation</th><th>Area</th></tr>
<tr><td>Triangles</td><td>$0.5 \times 6x \times 8x$</td><td>$24x^2 \times 2 = 48x^2$</td></tr>
<tr><td>Base</td><td>$8x \times 3x$</td><td>$24x^2$</td></tr>
<tr><td>Side</td><td>$6x \times 3x$</td><td>$18x^2$</td></tr>
<tr><td>Side</td><td>$10x \times 3x$</td><td>$30x^2$</td></tr>
<tr><td>Total</td><td>$48x^2 + 24x^2 + 18x^2 + 30x^2$</td><td>$120x^2$</td></tr>
</table>
Expression for at least one face
Expression for each face
$120x^2$</td><td>(1)
(1)
(1)</td></tr>
</table>

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