

20/20

Awesome effort.
You have improved
this year...well
done Jackson

Topic Summary Scaffold (TSS) for Area and Surface Area

(Part 1 of AT3; refer to the marking rubric)

1. I can calculate the areas of composite figures by dissection into triangles, special quadrilaterals, quadrants, semicircles and sectors:

Go to **Exercise 1 Part A** in your OneNote.

(2 marks each)

- a) Choose any example from question 2 (Snip and Paste below)

$$\begin{aligned} a - A &= (L \times w) - (L \times w) \\ &= (10.6 \times 8.2) - (4.2 \times 7.1) \quad \checkmark \\ &= 86.92 - 29.82 \\ &= 57.1 \quad \checkmark \\ A &= 57.1 \text{ m}^2 \end{aligned}$$

2 marks

- b) Choose any example from question 3 (Snip and Paste below)

$$\begin{aligned} a - A &= (L \times w) + \left(\frac{b \times h}{2}\right) \\ &= (7.4 \times 3.4) + \left(\frac{7.4 \times 1.6}{2}\right) \quad \checkmark \\ &= 25.16 + 5.92 \\ &= 31.08 \quad \checkmark \\ A &= 31.08 \text{ m}^2 \end{aligned}$$

2 marks

- c) Choose any example from question 5 (Snip and Paste below)

$$\begin{aligned} a - A &= s^2 + \left(\frac{\pi r^2}{2} \times 4\right) \quad \checkmark \\ &= 32^2 + \left(\frac{\pi 16^2}{2} \times 4\right) \quad \checkmark \\ &= 1024 + (1608.495439) \quad \checkmark \\ &= 2632.495439 \text{ mm}^2 \end{aligned}$$

2 marks

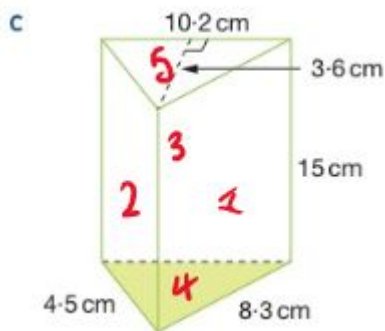
2. I can calculate the surface areas of rectangular and triangular prisms:

Go to **Exercise 2 Part A** in your OneNote.

(2 marks each)

a) Choose any example from question 3 (Snip and Paste below)

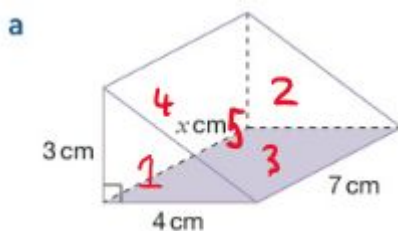
2 marks



$$\begin{aligned}
 c-A &= \textcircled{1} 15 \times 8.3 \quad \checkmark \\
 &+ \textcircled{2} 15 \times 4.5 \quad \checkmark \\
 &+ \textcircled{3} 15 \times 10.2 \quad \checkmark \\
 &+ \textcircled{4} (3.6 \times 10.2) \div 2 \quad \checkmark \\
 &+ \textcircled{5} (3.6 \times 10.2) \div 2 \quad \checkmark \\
 &\hline
 &381.72 \text{ cm}^2 \quad \checkmark
 \end{aligned}$$

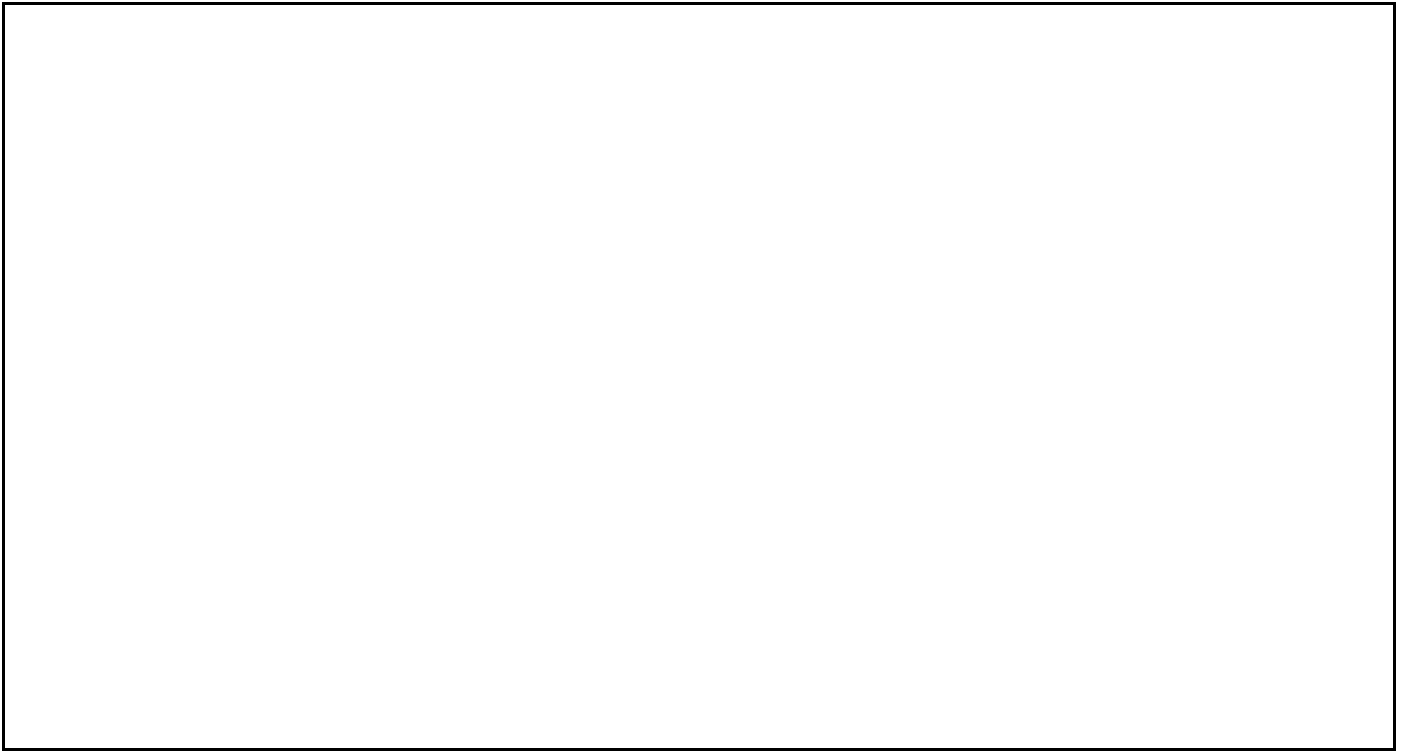
b) Choose any example from question 5 (Snip and Paste below)

2 marks



$$\begin{aligned}
 x^2 &= a^2 + b^2 \\
 &= 4^2 + 3^2 \\
 &= 25 \\
 &= \sqrt{25} \\
 &= 5 \quad \checkmark
 \end{aligned}$$

$$\begin{aligned}
 &\textcircled{1} (4 \times 3) \div 2 \quad \checkmark \\
 &\textcircled{2} (4 \times 3) \div 2 \quad \checkmark \\
 &\textcircled{3} 4 \times 7 \quad \checkmark \\
 &\textcircled{4} 5 \times 7 \quad \checkmark \\
 &\textcircled{5} 3 \times 7 \quad \checkmark \\
 &\hline
 &96 \text{ cm}^2 \quad \checkmark
 \end{aligned}$$



3. I can use the formula to find the surface areas of closed right cylinders:

Go to **Exercise 3 Part A** in your OneNote.

(2 marks each)

a) Choose any example from question 1 or question 2. (Snip and Paste below)

b radius = 4 cm
height = 15 cm

$$\begin{aligned}b-A &= 2\pi rh \checkmark \\ &= 2\pi 4 \times 15 \checkmark \\ &= 376.9911184 \checkmark \\ &= 376.99 \text{ cm}^2\end{aligned}$$


2 marks

b) Choose any example from question 3 (Snip and Paste below)

d radius = 50 mm, height = 75 cm

error should be 5 cm

2 marks
no
penalty



A hand-drawn diagram of a cylinder. The radius is labeled as 0.5 and the height is labeled as 75. The cylinder is drawn in perspective, showing the top and bottom circular faces and the curved side.

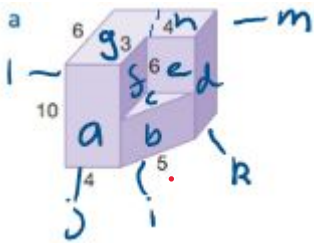
$$\begin{aligned}&= 75(2\pi r) + 2(\pi r^2) \checkmark \\ &= 75(2\pi 0.5) + 2(\pi 0.5^2) \checkmark \\ &= 235.619449 + 1.570796327 \checkmark \\ &= 237.1902453 \\ &= 237.19 \text{ cm}^2\end{aligned}$$

4. I can find the surface areas of composite solids involving right prisms and cylinders:

Go to **Exercise 4 Part A** in your OneNote.

(2 marks each)

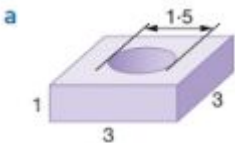
a) Choose any example from question 4 (Snip and Paste below)



2 marks

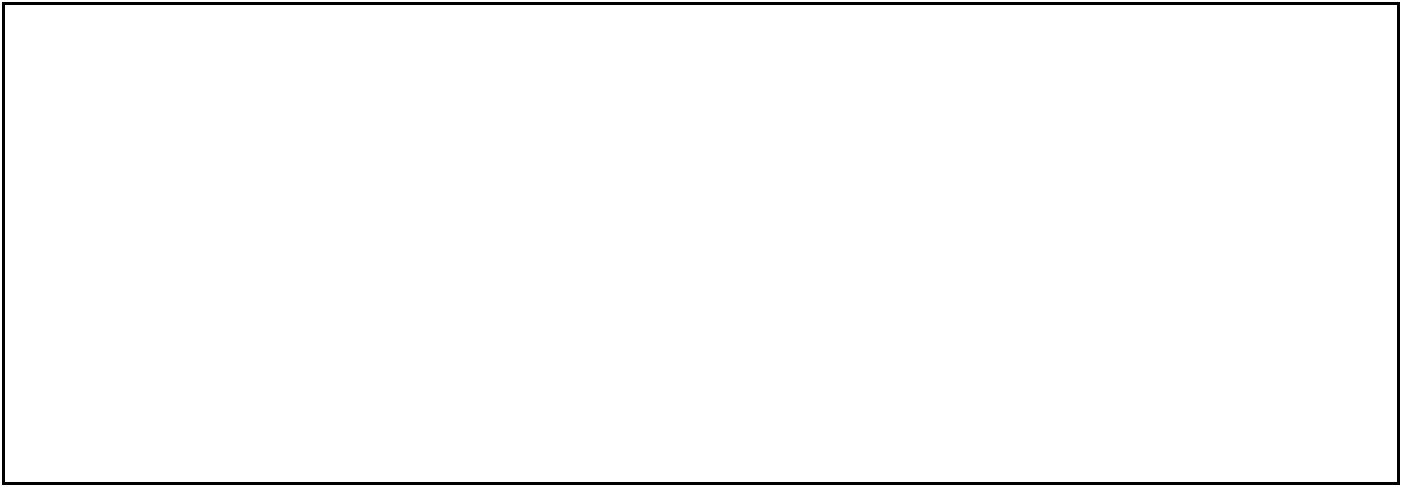
$$\begin{aligned}
 A &= a-40 \quad e-24 \quad i-6 \quad m-80 \\
 & b-20 \quad f-18 \quad j-24 \\
 & c-6 \quad g-24 \quad k-12 \\
 & d-30 \quad h-12 \quad l-60 \\
 & \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad = 356 \text{ cm}^2
 \end{aligned}$$

b) Choose any example from question 5 (Snip and Paste below)



$$\begin{aligned}
 a-A &= 4(3 \times 1) + 2(3 \times 3) + (\pi \times 1.5) - 2(\pi 0.75^2) \\
 &= 12 + 18 + 4.71238898 - 3.534291735 \\
 &= 31.17809725 \\
 &= 31.2 \text{ m}^2
 \end{aligned}$$

2 marks



5. I can solve a variety of practical problems related to surface areas of prisms, cylinders and related composite solids:

Go to **Exercise 4 Part b** in your OneNote.

(2 marks)

Choose **any example** from this section (Snip and Paste below)

7 The diagram represents a lounge room in a house.

The walls and ceiling are to be painted. Find:

- a the area of the walls
- b the area of the ceiling
- c the number of 4L cans of paint needed to paint the walls and ceiling twice if 1L of paint covers 16m^2 .

a- ① 3.6×2.4

② 2.4×4.4

③ 1.5×2.4

④ 2.4×2.4

⑤ 5.1×2.4

⑥ 6.8×2.4

57.12m²

b = $(6.8 \times 5.1) - (4.4 \times 1.5)$
 $= 28.08\text{m}^2$

c = $2(57.12 + 28.08) \div 16 \div 4$
 $= (170.4) \div 16 \div 4$
 $= 2.6625$
 $= 3, 4\text{litre cans needed}$

2 marks

