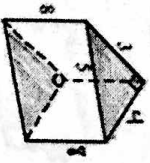


February 21 + 22
GUIDED NOTES: Surface Area and Volume

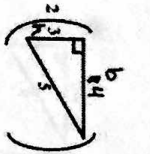
Surface Area - the sum of the area of all the shapes that assemble to make a 3D figure

EX1.

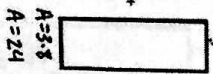


triangular prism
• 2 triangles (same)
• 3 rectangles (different)

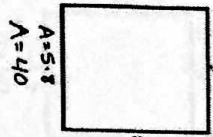
$$SA = 2 \cdot \frac{1}{2} \cdot 4 \cdot 3 + 24 + 40 + 32 = 108 \text{ units}^2$$



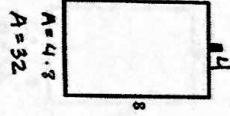
$$A = \frac{1}{2} \cdot 4 \cdot 3$$



$$A = 3 \cdot 8$$



$$A = 5 \cdot 8$$

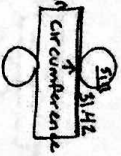


$$A = 4 \cdot 8$$

EX2.



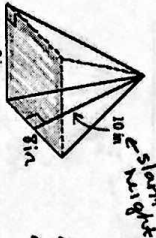
cylinder
• 2 circles (same)
• 1 rectangle



$$SA = 2 \cdot \pi r^2 + 2\pi r \cdot h$$

$$SA = 408.41 \text{ in}^2$$

EX3.



square pyramid
• 1 square
• 4 triangles (same)

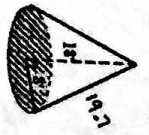
$$SA = 4 \cdot 4 + 4 \cdot \frac{1}{2} \cdot 8 \cdot 10 = 224 \text{ in}^2$$

EX5.



sphere
 $SA = 4\pi r^2$
 $SA = 4 \cdot \pi \cdot 6^2 = 152.39 \text{ mi}^2$

EX4.

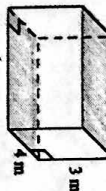


cone
• 1 circle
• lateral SA = $\pi r l$
• straight height

$$SA = 201.06 + 495.12 = 696.18 \text{ ft}^2$$

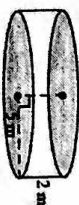
Volume - the amount of one shape stacked up inside of a 3D figure

EX6.



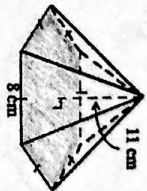
$$V = 4 \cdot 4 \cdot 3 = 48 \text{ m}^3$$

EX7.



$$V = \pi \cdot 5^2 \cdot 2 = 157.08 \text{ m}^3$$

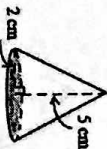
EX8.



pyramids: $V = \frac{1}{3} \cdot \text{area of base} \cdot \text{height of pyramid}$
hexagonal pyramid
 $A = l \cdot \frac{\sqrt{3}}{4} \cdot a^2$
side of hexagon

$$V = \frac{1}{3} \cdot 16 \cdot 28 \cdot 11 = 409.69 \text{ cm}^3$$

EX9.



cone
 $A = \pi \cdot 2^2 = 12.57$
 $V = \frac{1}{3} \cdot 12.57 \cdot 5 = 20.95 \text{ cm}^3$

$$\text{sphere: } V = \frac{4}{3} \pi r^3$$