

# LENGTH, AREA, VOLUME

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- PERIMETER IS THE TOTAL LENGTH OF THE OUTER SIDES OF THE SHAPE.
- AREA THE AMOUNT OF FLAT SPACE [2D] THAT THE SHAPE TAKES UP
- VOLUME THE AMOUNT OF SPACE [3D] THE OBJECT TAKES UP.

READ THE QUESTION CAREFULLY. MAKE SURE YOU'RE DOING THE RIGHT ONE.

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## FORMULAS / TABLES BOOK

→ [SEE SEPARATE NOTES FOR DETAILS ABOUT EXACT PAGES NEEDED]

- FOR THE VAST MAJORITY OF QUESTIONS, YOU WILL BE ASKED ABOUT A SHAPE WHICH IS IN THE TABLES BOOK.
  - ① LOOK UP THE FORMULA
  - ② WRITE IT DOWN
  - ③ FILL IN THE BITS THAT YOU KNOW
- SOMETIMES A QUESTION NEEDS YOU TO "WORK BACKWARDS". FOR EXAMPLE, THEY MIGHT TELL YOU THE VOLUME OF A CONE AND THE RADIUS, AND ASK YOU TO CALCULATE THE HEIGHT.
- USE THE SAME METHOD AS ABOVE - THEN

YOU NEED TO KNOW (NOT IN TABLES BOOK)

RECTANGLE / SQUARE :

$$\text{AREA} = \text{LENGTH} \times \text{WIDTH}$$
$$\text{PERIMETER} = \text{ADD UP ALL THE SIDES.}$$

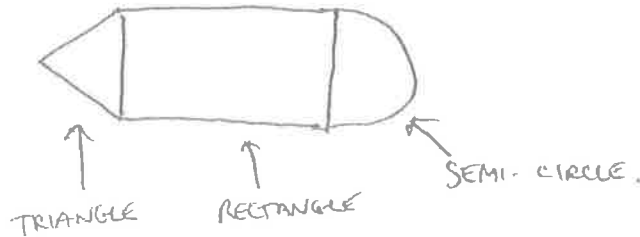
CUBE / RECTANGULAR SOLID (CUBOID) :

$$\text{VOLUME} = L \times B \times H$$

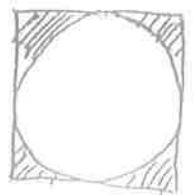
Length  $\times$  Breadth (WIDTH)  $\times$  Height

- IF THEY GIVE YOU A COMPLICATED-LOOKING SHAPE, BREAK IT UP INTO PARTS WHICH WE DO RECOGNISE :

eg



- THEY OFTEN ASK FOR THE AREA OF 'PART' OF THE SHAPE (THE SHADED PART) eg



- ① CALCULATE THE TOTAL AREA [SQUARE]
- ② CALCULATE THE NON-SHADED AREA [CIRCLE]
- ③ SUBTRACT

# CIRCULAR SHAPES

- MOST OF THE FORMULAS HAVE THE SYMBOL  $\pi$  ( $\pi$ ) IN THEM.

PI ::  $\pi = \frac{\text{CIRCUMFERENCE}}{\text{DIAMETER}}$

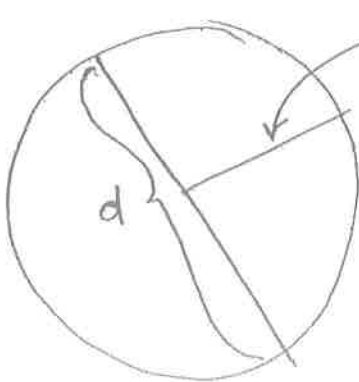
• "IN TERMS OF  $\pi$ "



DO THIS AS NORMAL, BUT DON'T SUBSTITUTE ANYTHING INTO YOUR FORMULA FOR  $\pi$

- THIS MEANS YOUR ANSWER WILL CONTAIN  $\pi$

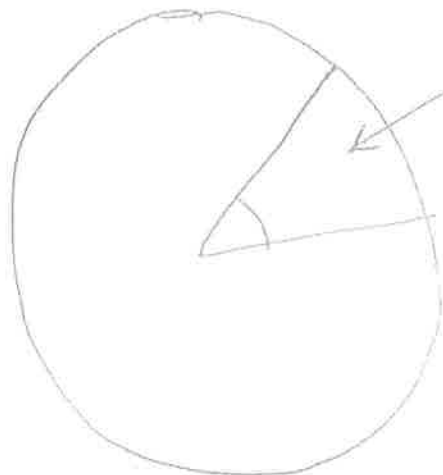
eg  $11\pi$



RADIUS (r)

d = DIAMETER

"DIAMETER"  
= DANGER WORD  
WRITE DOWN RADIUS



A SECTOR

[LIKE A PIZZA SLICE]

## WORD PROBLEMS

- READ THE PROBLEM CAREFULLY. (HIGHLIGHT IMPORTANT WORDS)
  - IF THERE ISN'T ALREADY A PICTURE, DRAW IT.
  - MARK ON THE DIAGRAM THE 'THING' YOU'RE TRYING TO CALCULATE
  - IF NECESSARY, BREAK UP THE SHAPE INTO SMALLER SHAPES.
  - DO YOUR CALCULATIONS
  - CHECK THAT YOUR ANSWER MAKES SENSE.
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## NETS

3D → 2D

OR

2D → 3D.

WE CAN CUT ALONG THE SIDES OF A 3D SHAPE - NOT ALL THE WAY, BECAUSE WE WANT IT TO STAY JOINED UP - THIS MAKES A "NET" OF THE 3D SHAPE. IT CAN THEN BE EASIER TO CALCULATE THINGS LIKE "SURFACE AREA"

