EX. 14.1 MEMO

Perimeter & Area of 2D Shapes

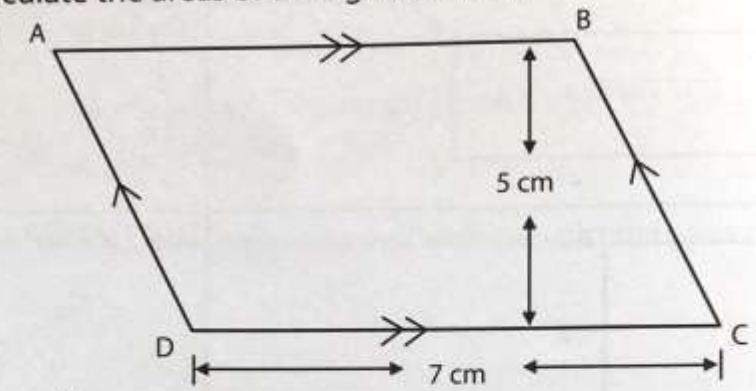
Topic 14

Exercise 14.1 Pg. 152 (No 1a-e)

EXERCISE 14.1

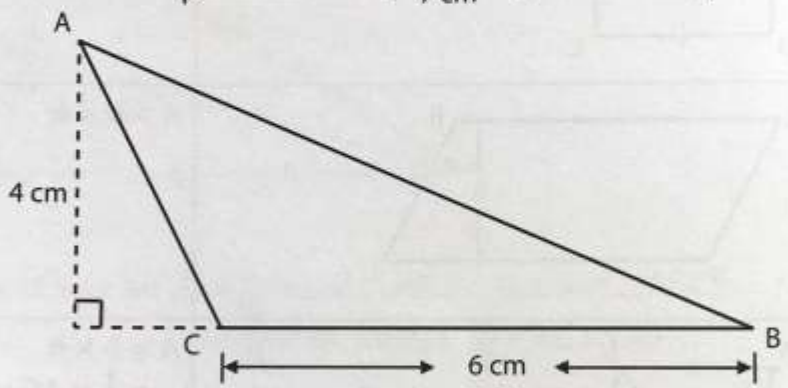
1. Calculate the areas of the figures below.

a)



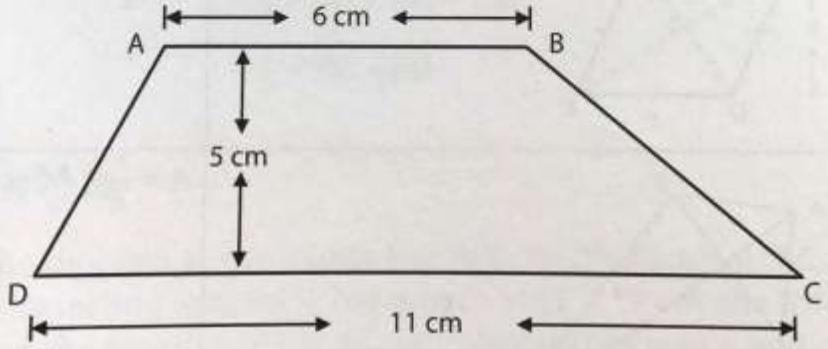
$$Area = b \times h$$
$$= 7 \times 5$$
$$= 35\ cm^2$$

b)



$$Area = \frac{1}{2}bh$$
$$= \frac{1}{2}(6)(4)$$
$$= 12\ cm^2$$

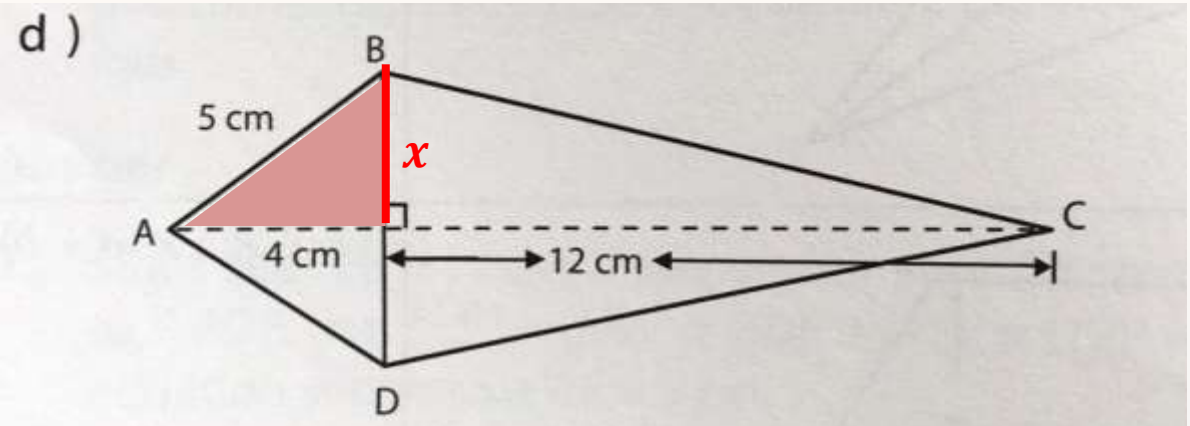
c)



$$Area = \frac{1}{2} \times h \times (b_1 + b_2)$$
$$= \frac{1}{2} \times (5) \times (6 + 11)$$
$$= 42{,}5\ cm^2$$

Exercise 14.1 Pg. 152 (No 1a-e)

d)



First need to workout the diagonals

$5^2 = 4^2 + x^2 \quad Pythag$

$25 = 16 + x^2$

$x^2 = 25 - 16$

$x^2 = 9$

$x = 3$

$2x = 2(3)$
$= 6$

$$Area = \frac{1}{2} \times d_1 \times d_2$$
$$= \frac{1}{2} \times (16) \times (6)$$
$$= 48\ cm^2$$

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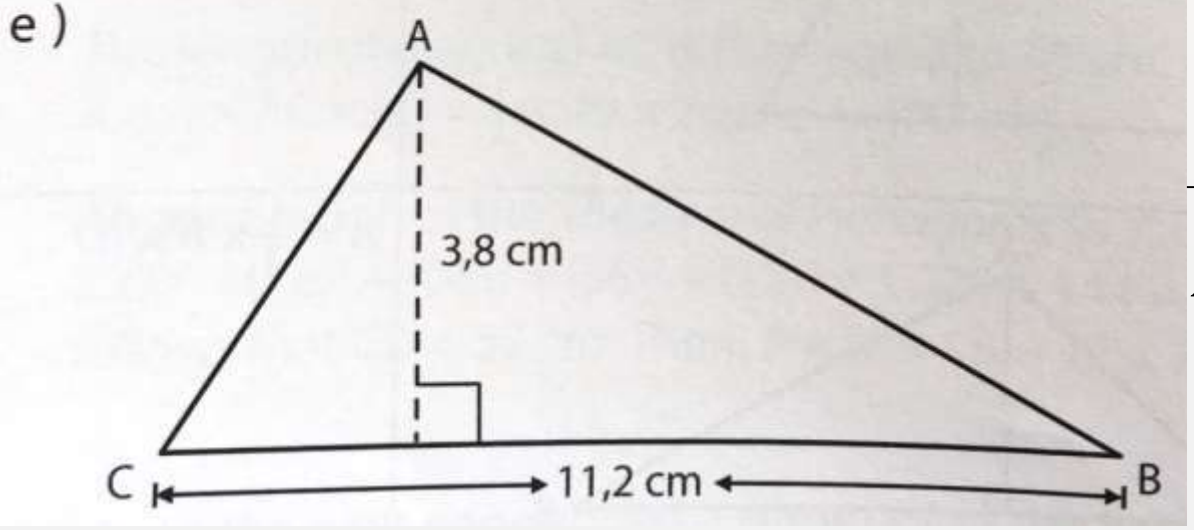
e)



$$Area = \frac{1}{2}bh$$
$$= \frac{1}{2}(11{,}2)(3{,}8)$$
$$= 21{,}28\ cm^2$$

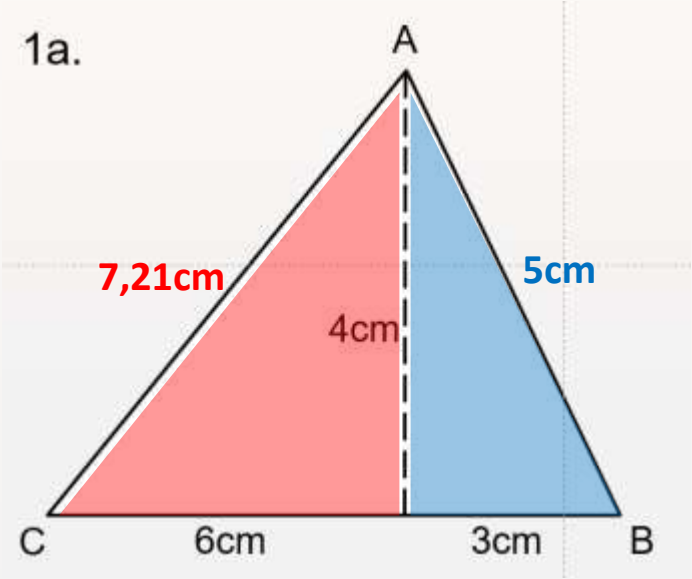
EX. 14.2 MEMO

Perimeter & Area of 2D Shapes

Topic 14

Exercise 14.2 Pg. 155 (No 1a, 2b,c)

1.) Calculate Area and Perimeter.
Round to 2 decimal places.



$$\boldsymbol{Area} = \frac{1}{2}bh$$

$$= \frac{1}{2}(9)(4)$$

$$= 18cm^2$$

Perimeter

First need to work out the sides of the triangles

$$AB^2 = 4^2 + 3^2 \quad Pythag$$
$$AB^2 = 16 + 9$$
$$AB^2 = 25$$
$$AB = 5cm$$

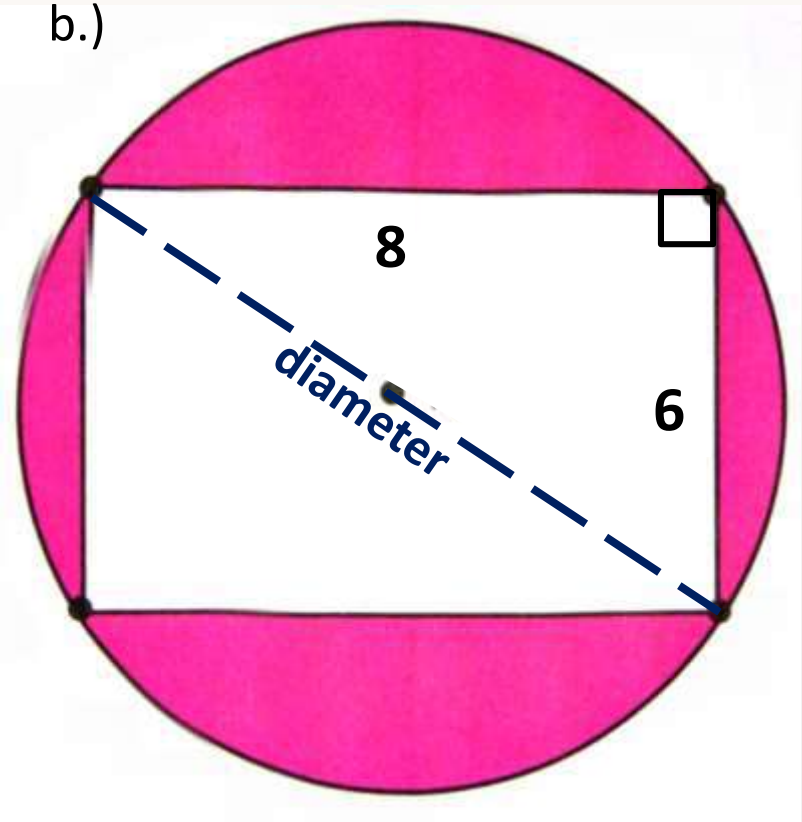
$$AC^2 = 4^2 + 6^2 \quad Pythag$$
$$AC^2 = 16 + 36$$
$$AC^2 = 52$$
$$AC = 7{,}21cm$$

$$P = 6 + 3 + 5 + 7{,}21$$
$$= 21{,}21cm$$

Exercise 14.2 Pg. 155 (No 1a, 2b,c)

2.) Calculate area of the shaded region.
All measurements are in cm.

b.)



Area of Circle

First work out the diameter using Pythag

$d^2 = 8^2 + 6^2 \quad Pythag$

$d^2 = 64 + 36$

$d^2 = 100$

$d = 10cm$

$A = \pi r^2$

$A = \pi \times (5)^2$

$A = 78{,}54\ cm^2$

Area of Rectangle

$A = l \times b$

$A = 8 \times 6$

$A = 48\ cm^2$

Area of Shaded Region

$= A_{Circle} - A_{Rect}$

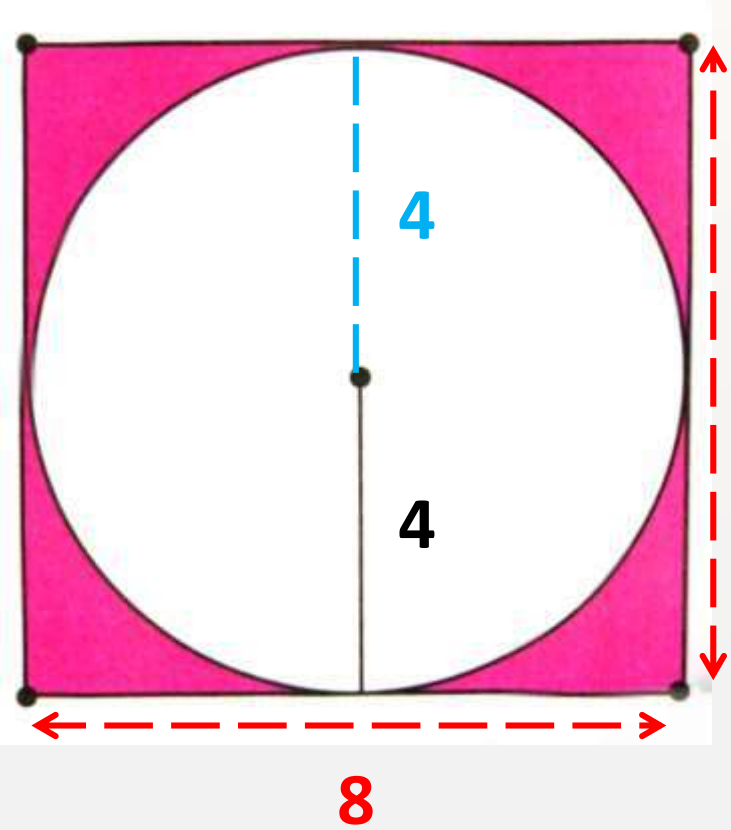
$= 78{,}54 - 48$

$= 30{,}54cm^2$

Exercise 14.2 Pg. 155 (No 1a, 2b,c)

2.) Calculate area of the shaded region.
All measurements are in cm.

c.)



Area of Circle

$A = \pi r^2$

$= \pi \times 4^2$

$= 50{,}27\ cm^2$

Area of Square

$A = l \times b$

$= 8 \times 8$

$= 64\ cm^2$

Area of Shaded Region

$A = A_{Square} - A_{Circle}$

$= 64 - 50{,}27$

$= 13{,}73\ cm^2$

REV EX. MEMO

Perimeter & Area of 2D Shapes

Topic 14

Revision Ex Pg. 159 (No. 1b, 2b, 3, 6, 8)

1. Convert:
   b) 0,066 m^2 to mm^2

2. Determine the diameter d of the circle with area
   b) 121 cm^2.

1b.) $0{,}066m \overset{\times 1000}{=} 66mm$

$0{,}066m^2 \overset{\times 1000^2}{=} 66\,000mm^2$

2b.) $Area = \pi r^2$

$\frac{121}{\pi} = \frac{\pi r^2}{\pi}$

$\sqrt{r^2} = \sqrt{38{,}515496\ldots}$

$r = 6{,}21\text{cm}$

$\therefore \boldsymbol{Diameter}$

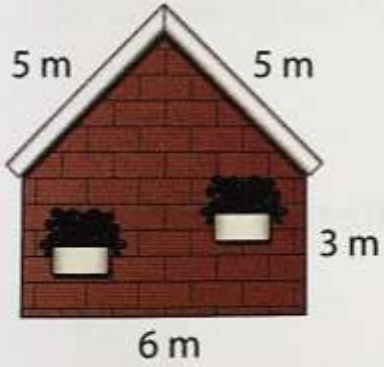
$= 2 \times radius$

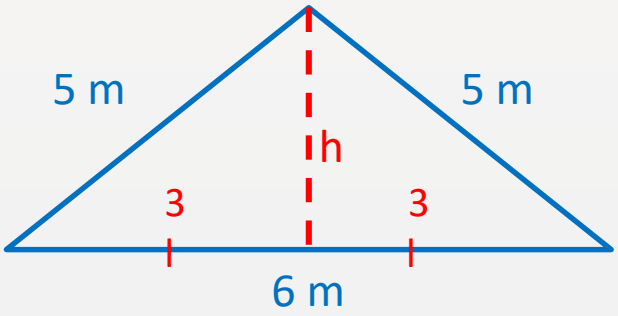
$= 2 \times (6{,}21)$

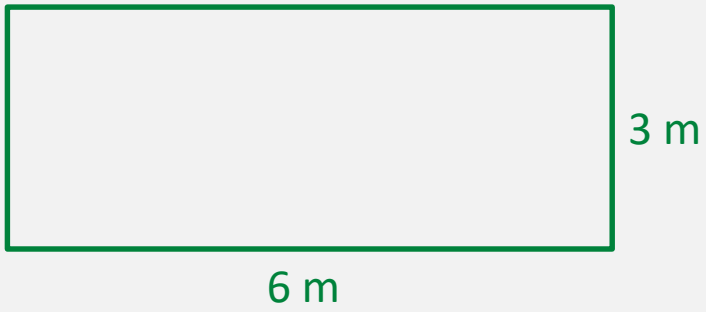
$= 12{,}42cm$

Revision Ex Pg. 159 (No. 1b, 2b, 3, 6, 8)

3. A wall of the side of a house is shown in the diagram. Calculate the area A of the wall.







Area Rectangle

$A = l \times b$

$= 6 \times 3$

$= 18m^2$

Height of Triangle

$3^2 + h^2 = 5^2 \quad Pythag$

$9 + h^2 = 25$

$h^2 = 25 - 9$

$h^2 = 16$

$h = 4m$

Area of Triangle

$Area = \frac{1}{2}bh$

$= \frac{1}{2}(6)(4)$

$= 12m^2$

Total Area

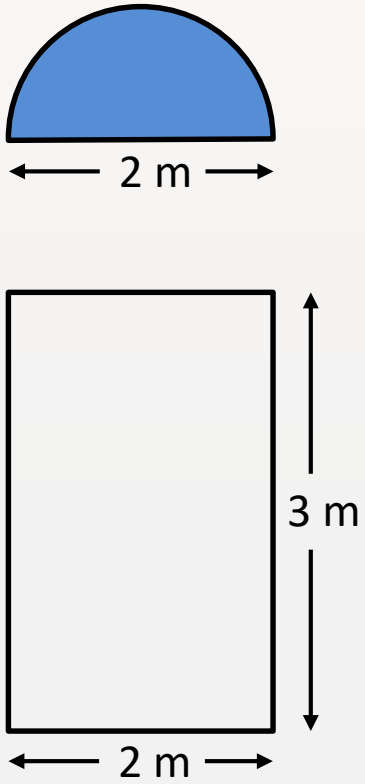
$= A_{Rect} + A_{\Delta}$

$= 18 + 12$

$= 30m^2$

Revision Ex Pg. 159 (No. 1b, 2b, 3, 6, 8)

6. A church window consists of a blue semi-circular section above a clear rectangular section as shown in the diagram. Calculate the area A and perimeter P of the window. (4)



Diameter $= 2m$
$\therefore$ Radius $= 1m$

Area of the Window

$$A_{Rect} = l \times b$$
$$= 3 \times 2$$
$$= 6m^2$$

$$A_{Semi\ Circle} = \frac{\pi r^2}{2}$$
$$= \frac{\pi(1)^2}{2}$$
$$= 1{,}57m^2$$

$$A_{Total} = A_{Rect} + A_{Semi\ Circle}$$
$$= 6 + 1{,}57$$
$$= 7{,}57m^2$$

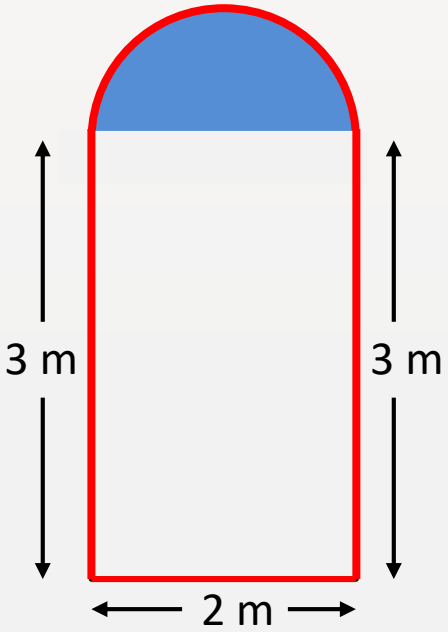
Perimeter of the Window

Revision Ex Pg. 159 (No. 1b, 2b, 3, 6, 8)

6. A church window consists of a blue semi-circular section above a clear rectangular section as shown in the diagram. Calculate the area A and perimeter P of the window. (4)

$C = 2\pi r \div 2$
$= 2\pi(1) \div 2$
$= \pi$

Diameter $= 2m$
$\therefore$ Radius $= 1m$



Area of the Window

$A_{Rect} = l \times b$
$= 3 \times 2$
$= 6m^2$

$A_{Semi\ Circle} = \frac{\pi r^2}{2}$
$= \frac{\pi(1)^2}{2}$
$= 1{,}57m^2$

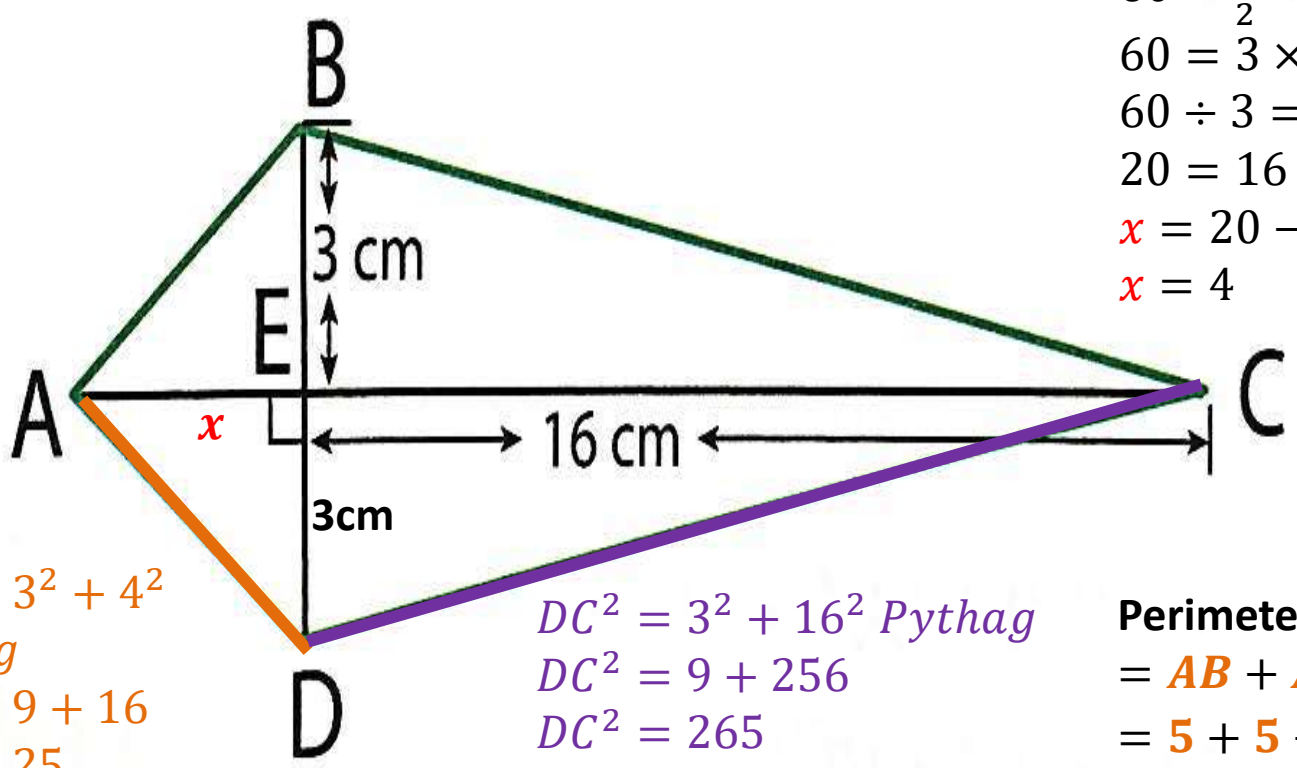
$A_{Total} = A_{Rect} + A_{Semi\ Circle}$
$= 6 + 1{,}57$
$= 7{,}57m^2$

Perimeter of the Window

$P = 3 + 3 + 2 + \pi$
$= 11{,}14m$

Revision Ex Pg. 159 (No. 1b, 2b, 3, 6, 8)

8. The kite in the diagram has an area equal to 60 cm². Calculate the perimeter P of the kite. (6)



Find the length AE

$A = \frac{1}{2} \times d_1 \times d_2$

$60 = \frac{1}{2} \times 6 \times (16 + x)$

$60 = 3 \times (16 + x)$

$60 \div 3 = 16 + x$

$20 = 16 + x$

$x = 20 - 16$

$x = 4$

$AD^2 = 3^2 + 4^2$ *Pythag*

$AD^2 = 9 + 16$

$AD^2 = 25$

$AD = 5cm$

$DC^2 = 3^2 + 16^2$ *Pythag*

$DC^2 = 9 + 256$

$DC^2 = 265$

$DC = \sqrt{265}cm$

Perimeter

$= \boldsymbol{AB + AD + BC + DC}$

$= \mathbf{5 + 5 + \sqrt{265} + \sqrt{265}}$

$= \mathbf{42,56}\boldsymbol{cm}$