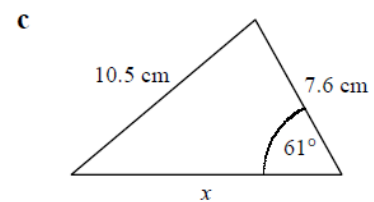
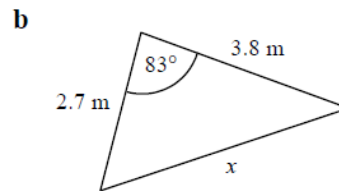
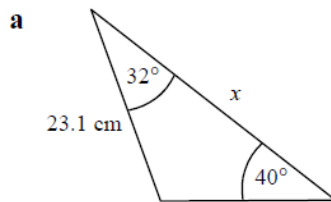


Pure 3 – Radians, Arcs and Sectors

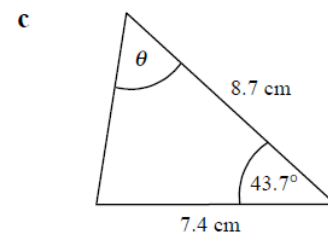
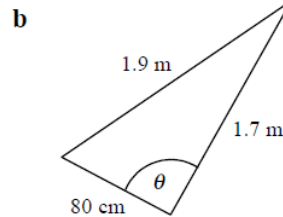
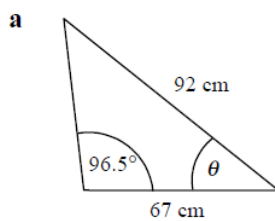
Please **complete** this homework by _____. Start it early. If you can't do a question you will then have time to ask your teacher for help or go to a drop in session.

Section 1 – Review of previous topics. Please **complete** all questions.

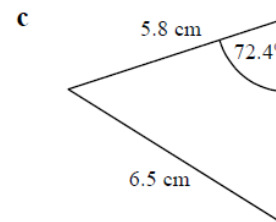
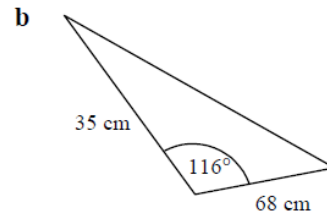
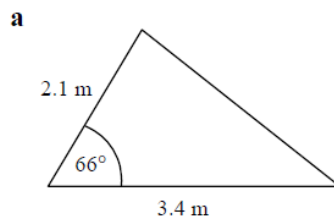
- In triangle ABC, $AB = 16.2\text{cm}$, $BC = 12.3\text{cm}$, and angle $BAC = 37^\circ$. Find the two possible sizes of angle ACB in degrees to 1 decimal place.
- Find the length x in each triangle.



- Find the angle θ in each triangle.



- Find the area of each of the following triangles.



- Sketch the graphs of

- $y = 3\sin x$ for $0 \leq x \leq 360^\circ$
- $y = \cos(x + 45)$ for $0 \leq x \leq 360^\circ$
- $y = \tan 2x$ for $0 \leq x \leq 360^\circ$
- $y = 2 + \sin 3x$ for $0 \leq x \leq 360^\circ$

Section 2 – Consolidation of this week’s topic. Please complete all questions.

1) Convert each angle from degrees into radians, giving your answer in terms of π .

- a) 180° b) 30° c) 45° d) 720° e) 18°

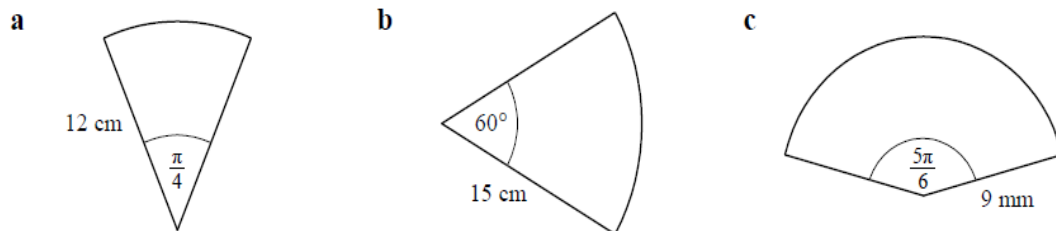
(2 marks each)

2) Convert each angle from radians to degrees

- a) 2π b) $\frac{\pi}{3}$ c) $\frac{3\pi}{4}$ d) $\frac{\pi}{18}$ e) $\frac{2\pi}{15}$ f) $\frac{\pi}{30}$

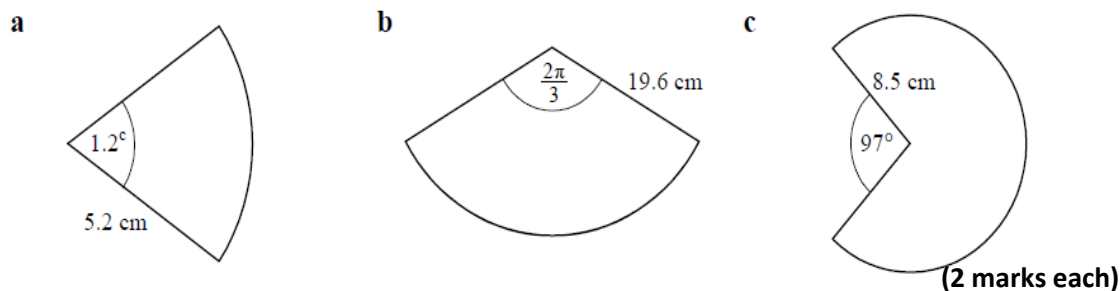
(2 marks each)

3) Find, in terms of π , the length of the arc in each of the following circular sectors.



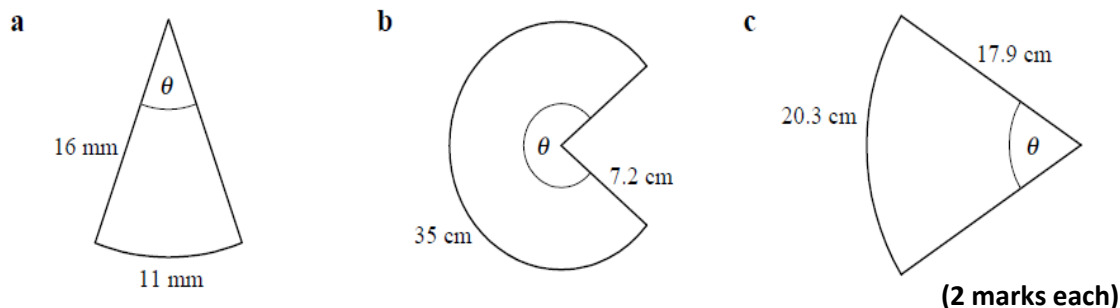
(2 marks each)

4) Find, to 3 significant figures, the perimeter of each of the following circular sectors.



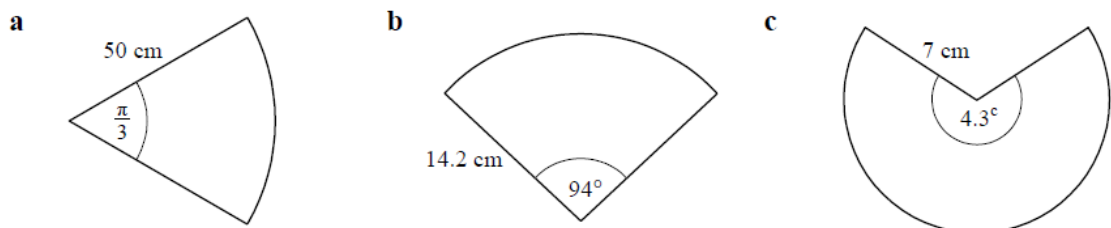
(2 marks each)

5) Find, in radians to 2 decimal places, the angle θ in each of the following circular sectors.



(2 marks each)

6) Find, in cm^2 to 1 decimal place, the area of each of the following circular sectors.



(2 marks each)

7) In the triangle ABC , $AB = 11$ cm, $BC = 7$ cm and $CA = 8$ cm.

(a) Find the size of angle C , giving your answer in radians to 3 significant figures.

(3)

(b) Find the area of triangle ABC , giving your answer in cm^2 to 3 significant figures.

(3)

(Total 6 marks)

8)

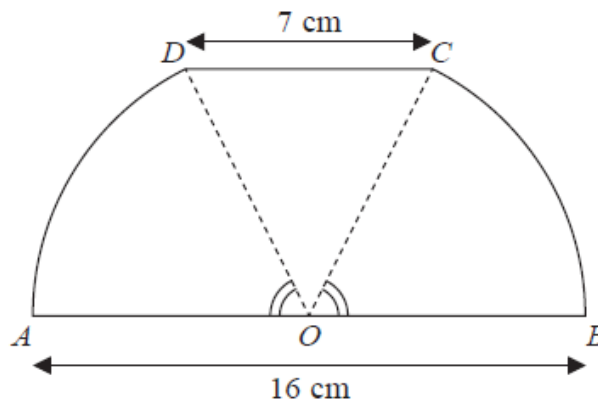


Figure 1

Figure 1 shows a sketch of a design for a scraper blade. The blade $AOBCDA$ consists of an isosceles triangle COD joined along its equal sides to sectors OBC and ODA of a circle with centre O and radius 8 cm. Angles AOD and BOC are equal. AOB is a straight line and is parallel to the line DC . DC has length 7 cm.

(a) Show that the angle COD is 0.906 radians, correct to 3 significant figures.

(2)

(b) Find the perimeter of $AOBCDA$, giving your answer to 3 significant figures.

(3)

(c) Find the area of $AOBCDA$, giving your answer to 3 significant figures.

(3)

(Total 8 marks)

Total for Section 2 = 60 marks