

FINAL EXAMINATION  
2024 – 2025  
QUESTION-ANSWER BOOK

Subject: Secondary 2 Mathematics

Paper: II

Time Allowed: 1 hour

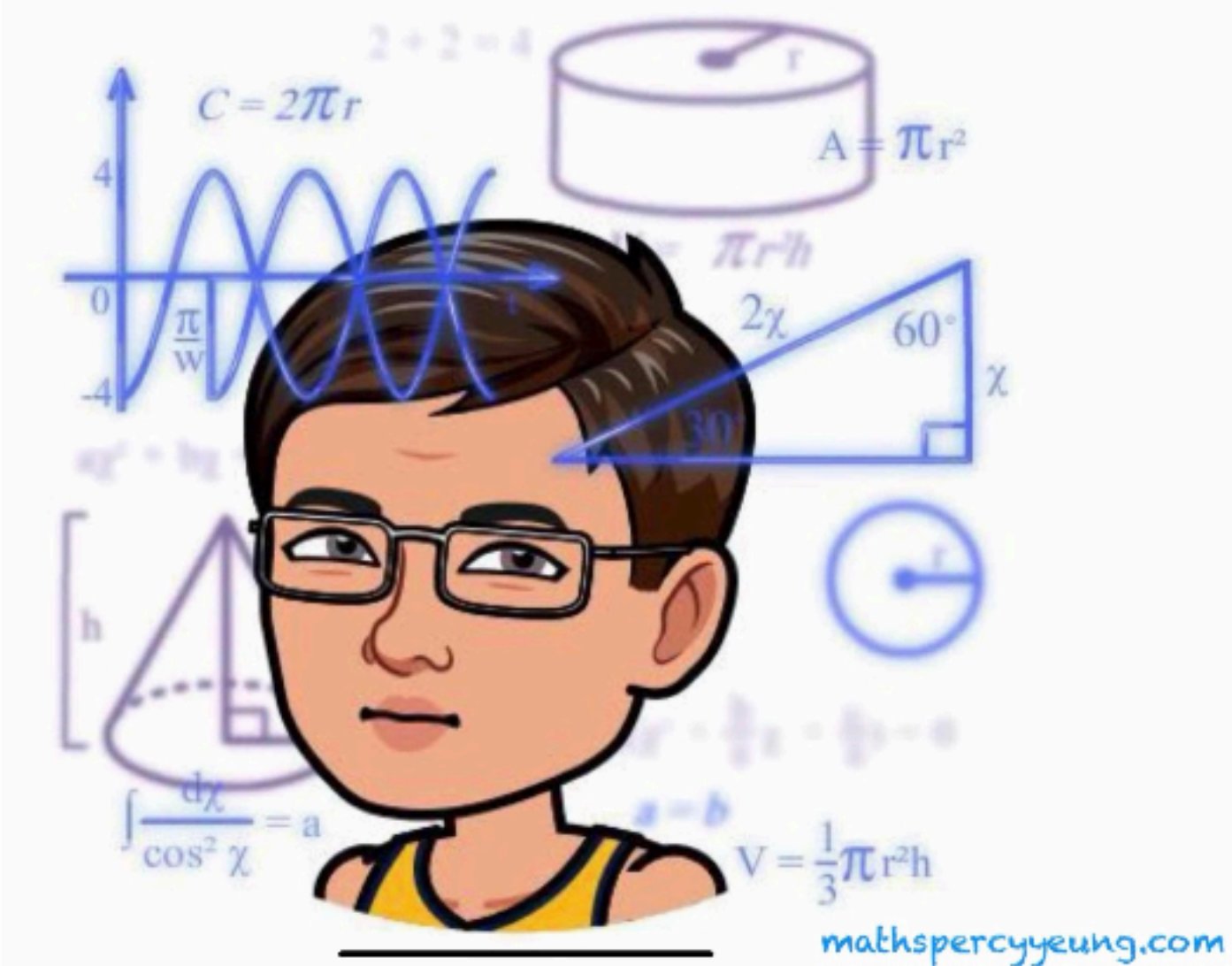
Total Marks: 100

INSTRUCTIONS

- (1) Write your name, class and examination number in the spaces provided.
- (2) This paper consists of Three Sections, A1, A2 and B.
- (3) Attempt ALL questions in ALL Sections. Write your answers in the spaces provided in this Question-Answer Book. Do not write in the margins.
- (4) Unless otherwise specified, the use of HKEAA approved electronic calculators is allowed.
- (5) Unless otherwise specified, all working must be clearly shown.
- (6) Unless otherwise specified, numerical answers should be exact or correct to 3 significant figures.



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No. of pages: 13

| Page  | Marks |  |
|-------|-------|--|
| 2     |       |  |
| 3     |       |  |
| 4     |       |  |
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| 9     |       |  |
| 10    |       |  |
| 11    |       |  |
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**Section A1 (40 marks): working steps must be shown in answering questions in this section.**

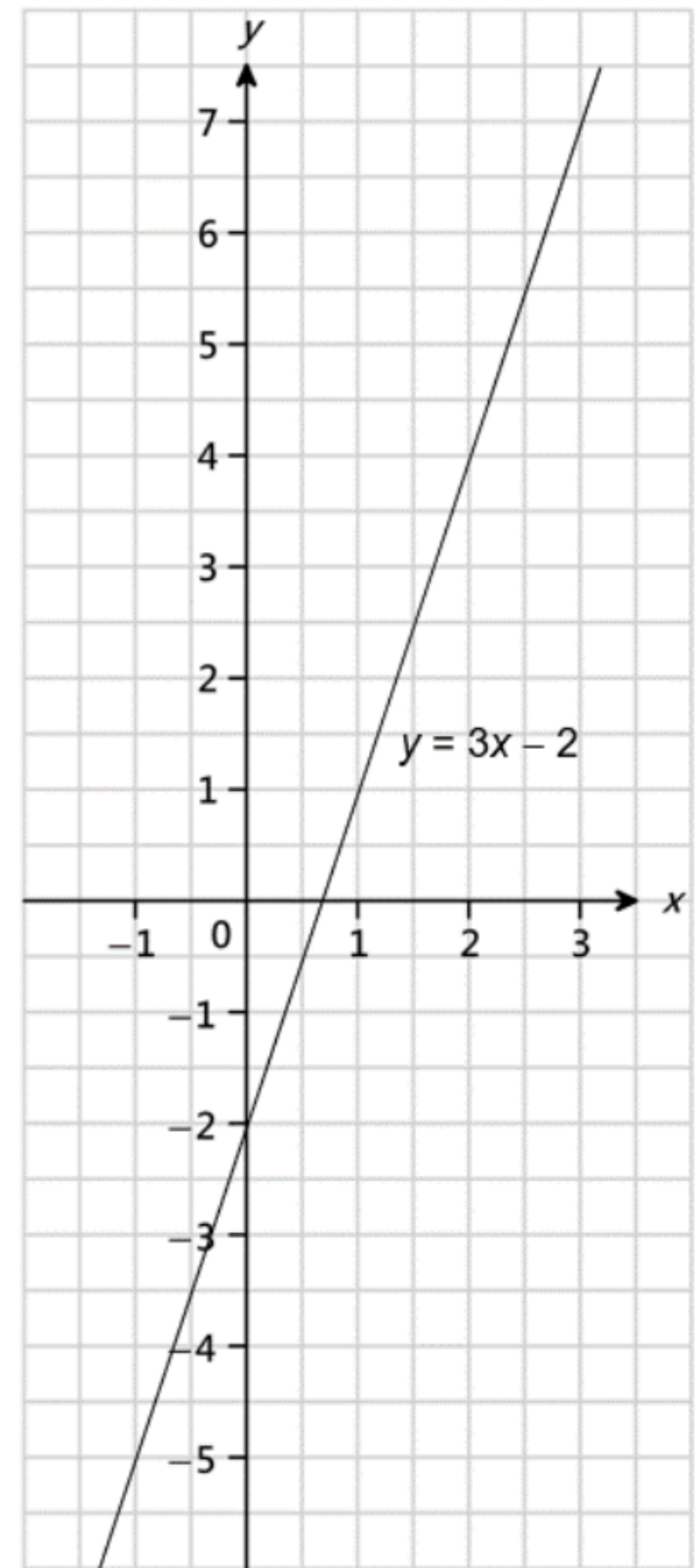
1. The price rate of strawberries is \$70/lb. Find the price for 5 lb of strawberries. (1 mark)
  
  
  
  
  
  
  
  
  
  
2. A jet travels 1962 km in 2 hours. Find the speed of the jet in km/h. (2 marks)
  
  
  
  
  
  
  
  
  
  
3. Simplify the following ratios. (5 marks)
  - (a)  $0.24 : 0.52$
  
  
  
  
  
  
  
  
  
  
  - (b)  $64 \text{ mm} : 8 \text{ cm}$
  
  
  
  
  
  
  
  
  
  
  - (c)  $1500 \text{ s} : 2 \text{ h}$
  
  
  
  
  
  
  
  
  
  
4. Determine whether  $(2, -14)$  is a solution of the equation  $y = 5x + 4$ . (2 marks)

Answers written in the margins will not be marked.

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5. The figure below shows the graph of the equation  $y = 3x - 2$ . If  $A(-1, a)$  and  $B(b, 4)$  are points on the graph, write down the values of  $a$  and  $b$ . (2 marks)

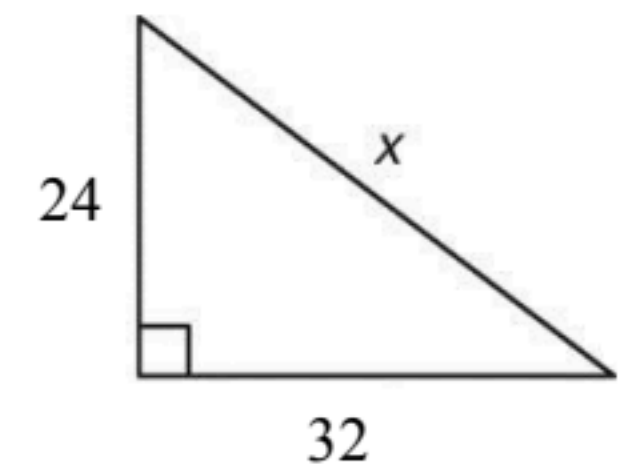


6. Solve the simultaneous equations  $\begin{cases} -3x + 4y = 7 \\ x = 1 - 2y \end{cases}$  by the method of substitution. (3 marks)

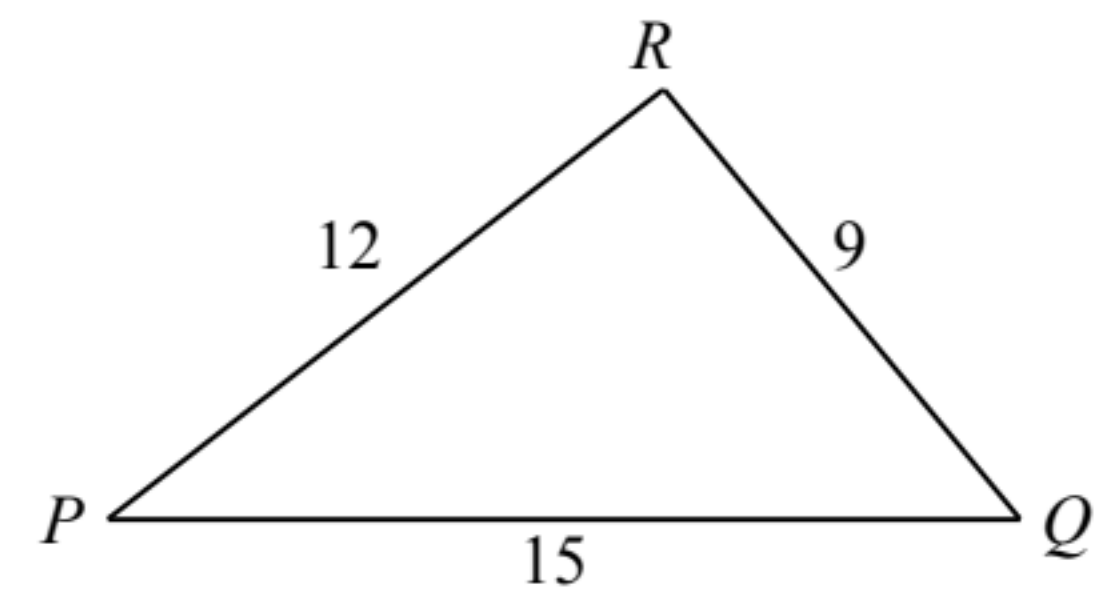


7. Find the integral part of  $\sqrt{62}$  without using a calculator. (2 marks)

8. Find  $x$  in the figure. (2 marks)



9. Determine whether  $\triangle PQR$  is a right-angled triangle. If it is, state the right angle. (3 marks)



10. Express  $\sqrt{300}$  in its simplest form. (2 marks)

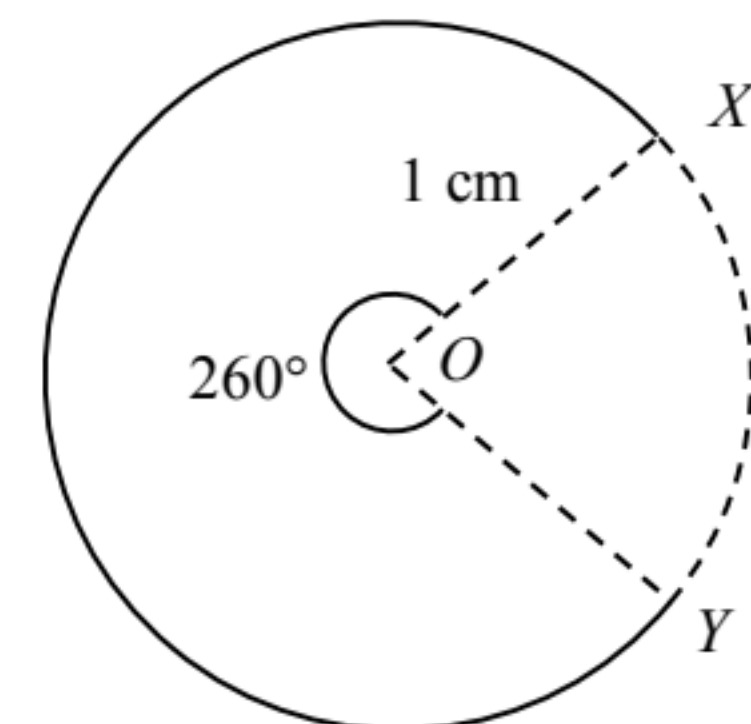


11. Find the circumference of a circle with diameter 8 cm.

(2 marks)

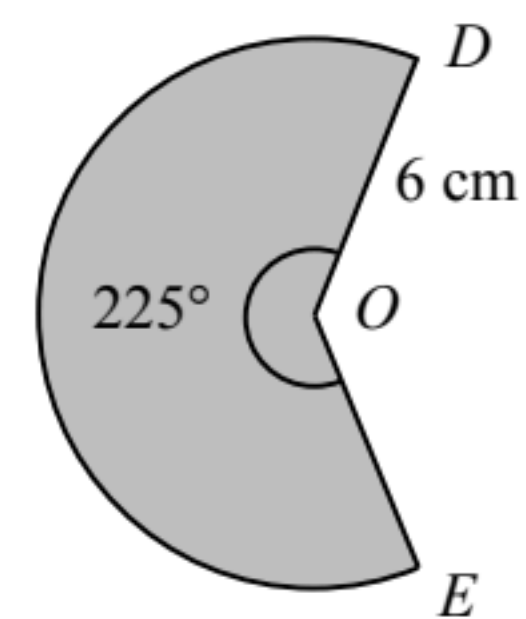
12. Find the length of  $\widehat{XY}$  in the figure.

(2 marks)



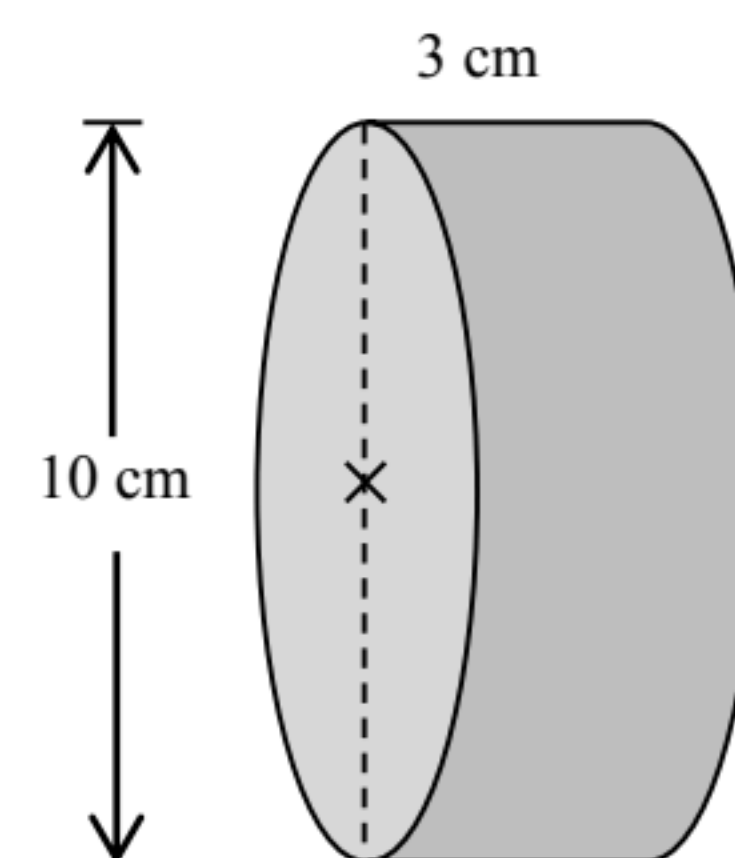
13. In the figure, find the area of sector  $ODE$ .

(2 marks)



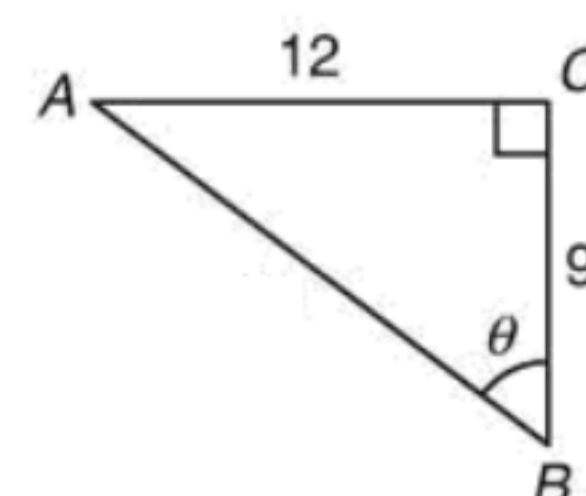
14. Find the curved surface area of the following right circular cylinder.

(2 marks)



15. Refer to the figure. Find the value of  $\sin \theta$  and  $\tan \theta$ .  
(Give your answer in a fraction.)

(4 marks)



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16. In each of the following, find  $\theta$ .

(4 marks)

(a)  $\cos \theta = \frac{2}{7}$

(b)  $\sin \theta = \frac{2}{\sqrt{5}}$

(c)  $6\sin \theta = 5$

(b)  $9\tan \theta = 7$

**Section A2 (30 marks): working steps must be shown in answering questions in this section.**

1. Let  $x$  and  $y$  be non-zero numbers. If  $2.5y = 6.5x$ , find  $x : y$ . (2 marks)

2. If  $x : y = 15 : 8$  and  $y : z = \frac{3}{7} : \frac{1}{8}$ , find  $x : y : z$ . (4 marks)

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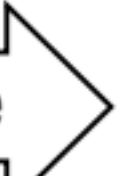


3. Solve the simultaneous equations  $\begin{cases} 5x - 4y - 8 = 0 \\ 3x - 5y + 3 = 0 \end{cases}$  by the method of substitution. (3 marks)

4. Solve the simultaneous equations  $\begin{cases} 7x - 6y - 13 = 0 \\ 8x + 9y + 1 = 0 \end{cases}$  by the method of elimination. (3 marks)

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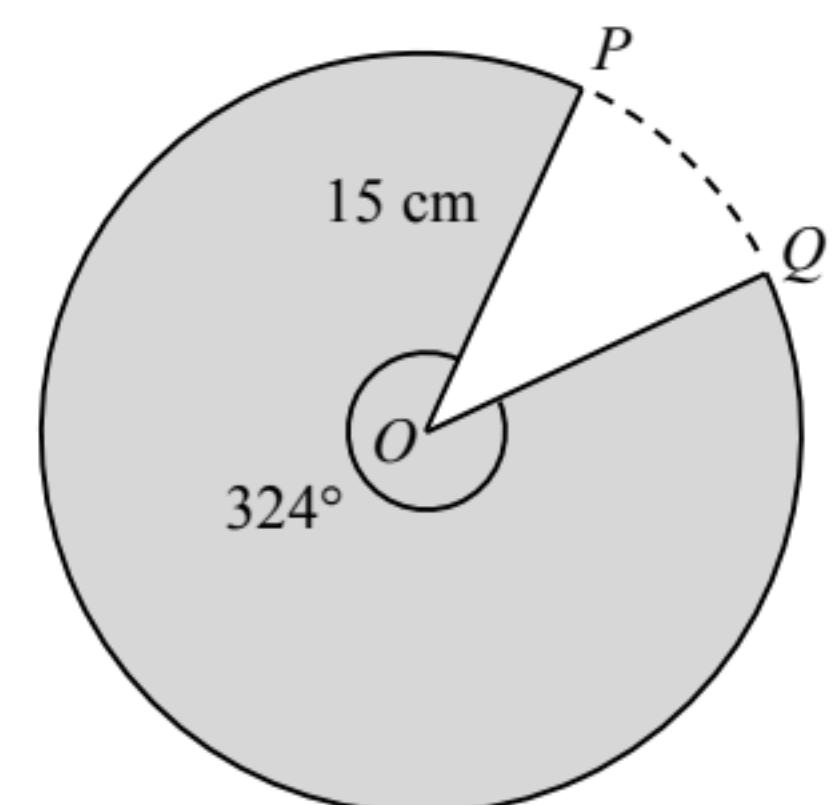
Page total



5. Peter and Jennifer leave a camp site at the same time. Peter cycles due west at 18 km/h, and Jennifer cycles due north at 11.2 km/h. After  $x$  hours, they are 53 km apart. Find the value of  $x$ . (3 marks)

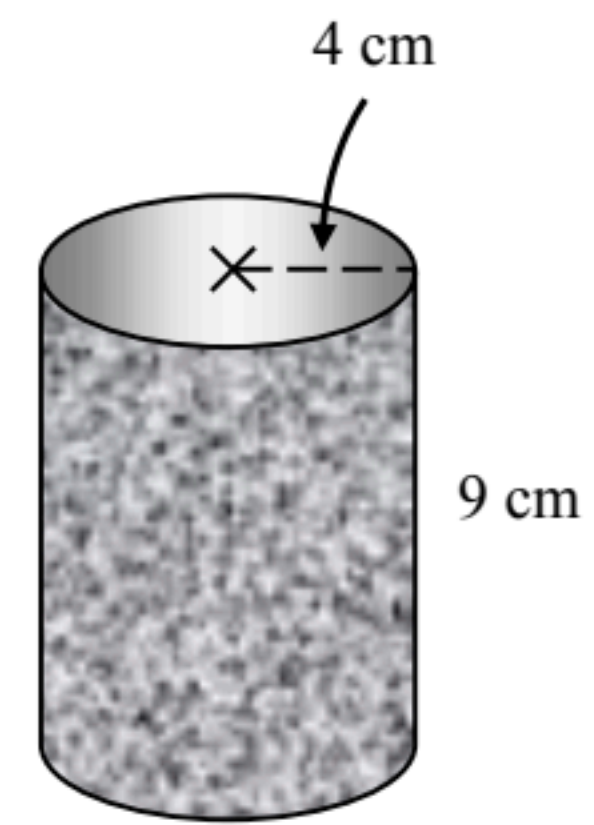
6. Simplify  $\frac{7}{\sqrt{2}} + \frac{5}{4\sqrt{2}}$  and rationalize the denominator of the result. (4 marks)

7. The figure shows a circle with centre  $O$ . It is given that the radius of the circle is 15 cm and reflex  $\angle POQ = 324^\circ$ . Find the perimeter of the shaded region. (3 marks)

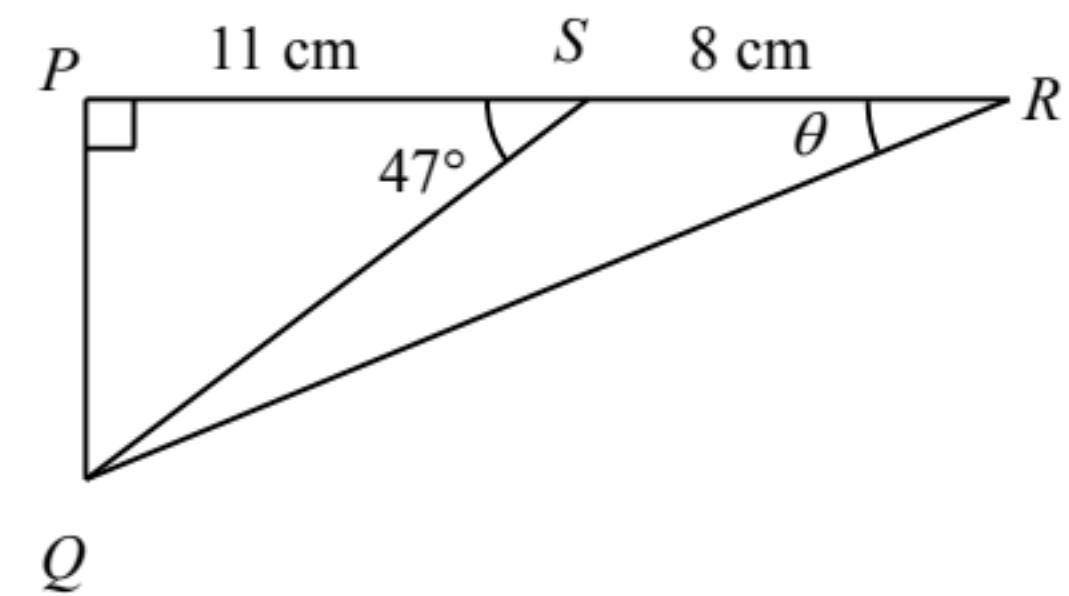




8. The figure shows a right circular cylindrical pen holder (without a lid). The base radius and the height of the pen holder are 4 cm and 9 cm respectively. Find the area of material used to make such a pen holder. (3 marks)



9. In the figure,  $PSR$  is a straight line. Find  $\theta$ . (5 marks)





**Section B (30 marks): working steps must be shown in answering questions in this section.**

1. 90 pieces of cardboard are shared among Annie, Bella and Cathy. The ratio of Annie's share to Cathy's share is 3 : 5. The ratio of Bella's share to Cathy's share is 2 : 1. (6 marks)
- (a) Find Annie's share : Bella's share : Cathy's share.

- (b) Bella claims that she has 40 more pieces of cardboard than Annie. Do you agree? Explain your answer.

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2. Jennifer made some cupcakes and puddings for Christmas party. The cost of making a cupcake is greater than that of making a pudding by \$4. If Jennifer made 12 cupcakes and 7 puddings with \$105, find the costs of making a cupcake and a pudding respectively. (3 marks)

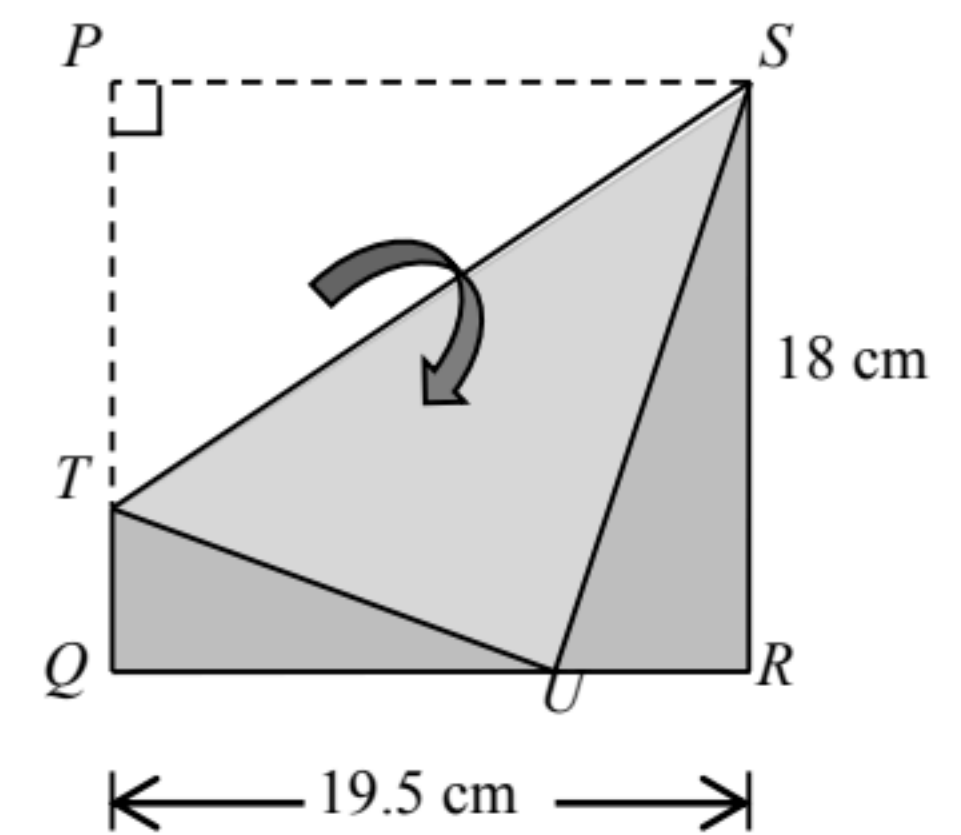
3. The perimeter of a rectangle is 36 cm. Let its length be  $x$  cm and width be  $y$  cm. If its length is twice its width, find its length and width. (3 marks)



4. The figure shows a rectangular paper  $PQRS$  with  $QR = 19.5$  cm and  $RS = 18$  cm. The paper is folded along  $ST$  such that  $PS$  becomes  $SU$  where  $U$  is a point on  $QR$ .

(a) Find the length of  $RU$  and  $QU$ .

(3 marks)

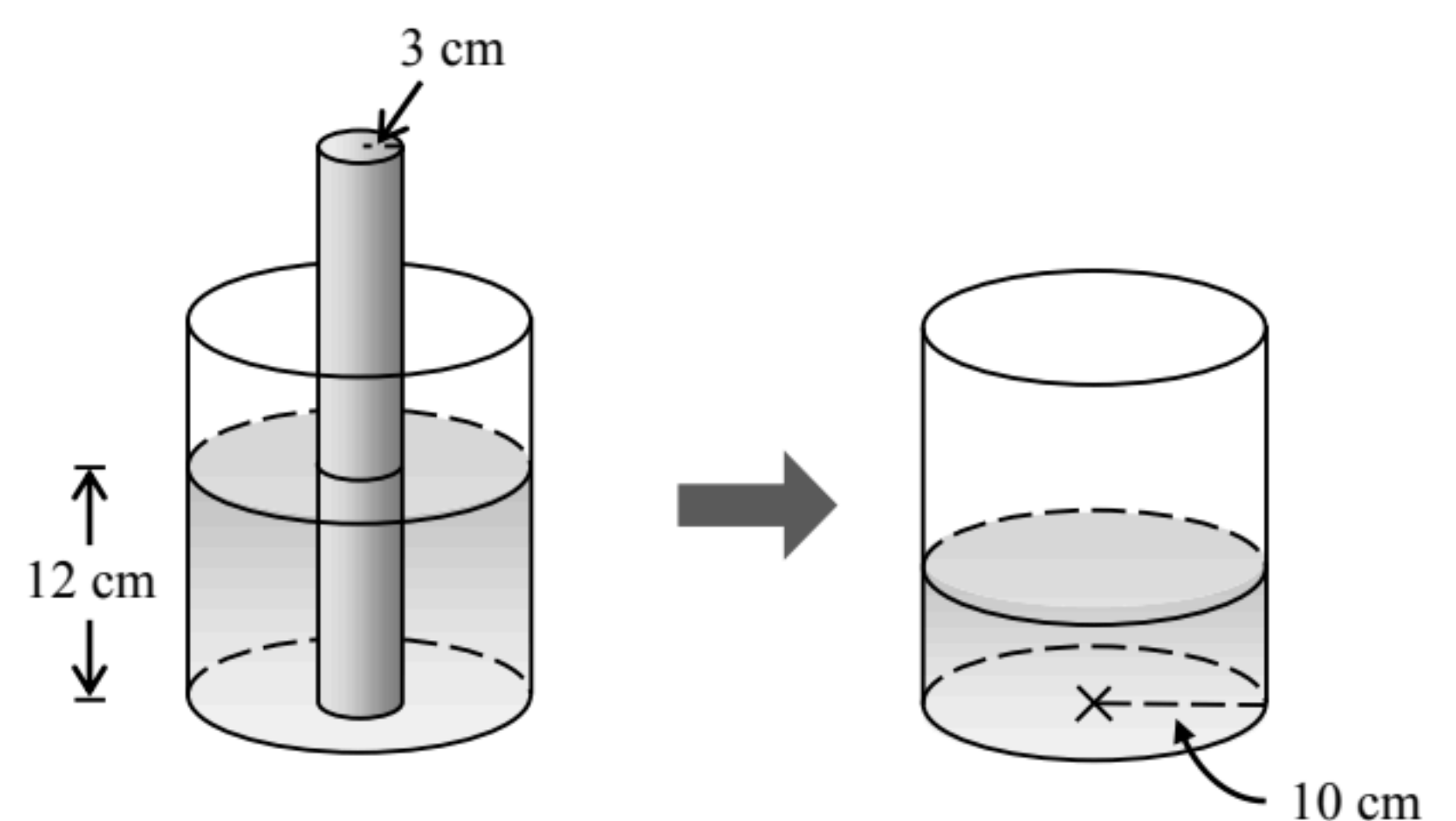


(b) Hence, find the length of  $QT$ .

(3 marks)

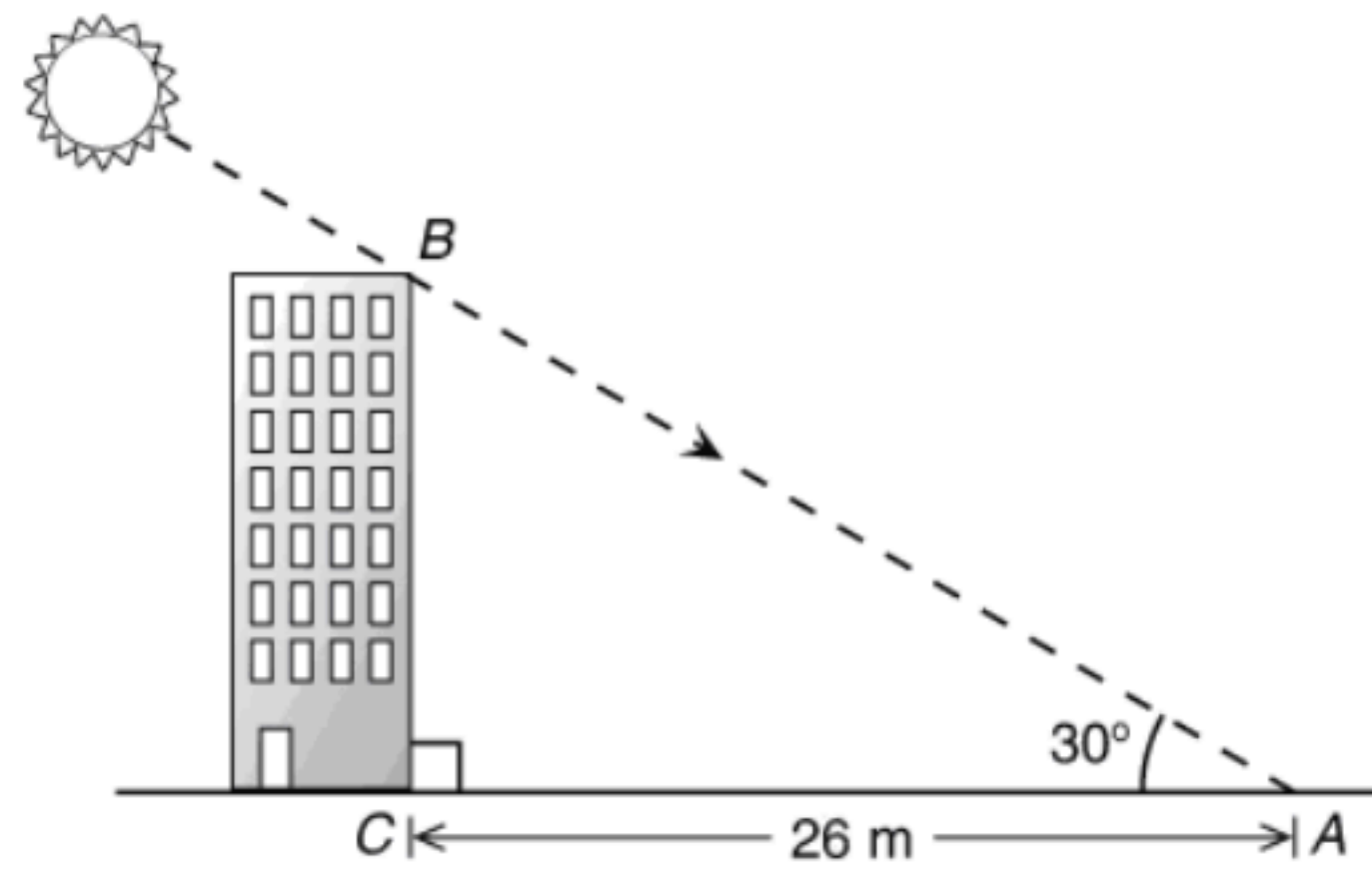
5. In the figure, a right circular cylindrical rod of base radius 3 cm is placed vertically into a right circular cylindrical tank of base radius 10 cm. The tank contains some water of height 12 cm. If the rod is removed from the tank, find the decrease in water level.

(6 marks)





6. A building casts a shadow 26 m long on the ground when the sun ray makes an angle of  $30^\circ$  with the horizontal ground.



- (a) Find the height of the building.

(3 marks)

- (b) Two hours later, the angle that the sun ray makes with the ground becomes  $15^\circ$ . Find the length of the new shadow.

(3 marks)