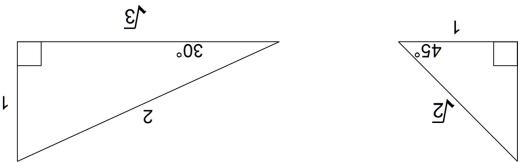


Use the triangles above and reference angles to determine the **exact** value of

$$(a) \cos 60^\circ$$

$$(b) \sin 225^\circ$$



Consider the two right triangles shown below.

Question 1 [1, 2, 2 = 7 marks]

Section 1: Working
Resource - time: 20
Free minutes

| % | Section 1 | | Section 2 | | Total | Total |
|---|-----------|---------|-----------|---------|-------|-------|
| | Result | Working | Result | Working | 50 | 50 |
| | | | | | | |
| | | | | | | |
| | | | | | | |

All working must be shown in the space provided. Your working should be in sufficient detail to allow your answers to be checked readily and for marks to be awarded for reasoning. Incorrect answers given without supporting reasoning cannot be allocated any marks. For any question or part question worth more than 2 marks, valid working or justification is required to receive full marks.

Test date: Thursday 4th March

TERM 1, 2021

TEST 1

YEAR 11 MATHEMATICS
METHODS UNIT 1



APPLECROSS
SENIOR HIGH SCHOOL

STUDENT NAME:

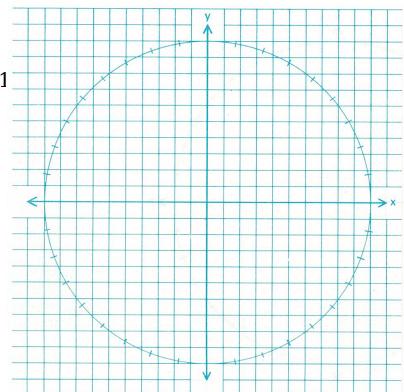
(c) θ , where $\tan \theta = \frac{1}{\sqrt{3}}$ for $0^\circ \leq \theta \leq 360^\circ$

(d) Use the triangle from page 1 (showing an angle of 30°)
to demonstrate that $\frac{\sin \theta}{\cos \theta} = \tan \theta$

Question 2 [1, 2 = 3 marks]

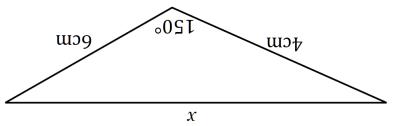
Use the unit circle below to answer the questions on the right.

Give your answers to an appropriate degree of accuracy.



(a) Determine the value of \sin

(b) Solve for x where
 $\cos x = -0.8$ and $0^\circ \leq x \leq 360^\circ$



(a) Find the exact value of x^2 showing full setting out.

Question 4 [3, 2 = 5 marks]

(b) Express -285° to radians, as a fraction of π .

(a) Convert $\frac{6}{5\pi}$ radians to degrees

Question 3 [2 marks]



**YEAR 11 MATHEMATICS
METHODS UNIT 1**

APPLECROSS
SENIOR HIGH SCHOOL

STUDENT NAME: _____

All working must be shown in the space provided. Your working should be in sufficient detail to allow your answers to be checked readily and for marks to be awarded for reasoning. Incorrect answers given without supporting reasoning cannot be allocated any marks. For any question or part question worth more than 2 marks, valid working or justification is required to receive full marks.

Section 2: working
Resource - time: 35
Rich minutes

Question 1 [8 marks]

- (a) Determine the area of triangle PQR when $\angle PQR=26^\circ$, $\angle PRQ=122^\circ$ and $PQ=57$ cm.

(4 marks)

- (b) The area of triangle ABC is 96 cm^2 , $\angle ACB=30^\circ$ and $2BC=3AC$ as shown in the diagram. Determine the value of x and then calculate the length of AB .

(4 marks)

TEST 1
TERM 1, 2021
Test date: Thursday 4th March

- (c) Find the bearing of A from its final position.

(3 marks)

End of Section 1

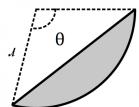
| | Total | Result | % |
|-----------|-------|--------|---|
| Section 1 | 17 | | |
| Section 2 | 33 | | |
| Total | 50 | | |

End of Section 2

(3 marks)

- (a) Determine the area of the segment.
(b) Determine the perimeter of the segment.

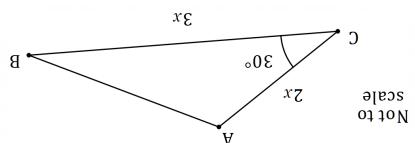
(2 marks)



- (a) Determine the area of the segment.

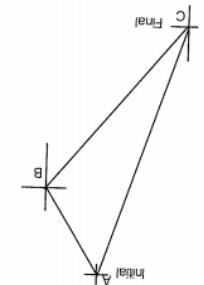
A segment of a circle of radius 22 cm is shown below, where $\theta = \frac{10}{7}\pi$.

Question 2 [2, 3 = 5 marks]



A boat sails from A in the direction 125° for 40 km. It then sails along 210° for 100 km. Complete the diagram below to show this information.

- (a) Calculate the direct distance between A and its final position. (2 marks)



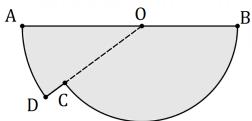
Question 6 [1, 2, 3 = 6 marks]

Question 4 [3 marks]

Calculate, to the nearest degree, the acute angle between the line $y=1.5x-4$ and the line $y=-0.5x+4$.

Question 3 [5 marks]

Shape $AOBCDA$ below consists of sector BOC of circle centre O joined to sector DOA of a different circle, also centre O . AB is a line of length 65 cm, arc AD is 12 cm long and $\angle AOD=0.32$ radians.



- (a) Determine the length OA .

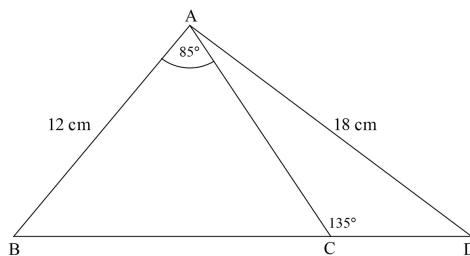
(2 marks)

- (b) Determine the area of the shape.

(3 marks)

Question 5 [6 marks]

Determine, correct to 2 decimal places, the length of side BD in the diagram below.



Note: the diagram is not drawn to scale.