Year 10 Mathematics 5.3

Term 3 2015

Name:_____ Class:_____

Circle : Mr Wilson / Mr Gong / Mr Cheng / Ms Lego

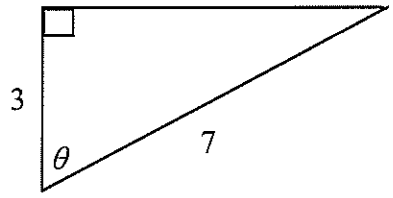
Time allowed: 55 minutes

- Approved calculators may be used
- Show all necessary working
- Marks may be deducted for untidy setting out
- Questions marked with an * are extension level questions
- All questions are worth 1 mark unless otherwise stated

Topic	Trigonometry	Coordinates Geometry	Data	Graph of Physical Ph..	Total
Mark	/16	/9	/16	/6	/47
Extension	/4	/2	/1	/2	/9
Total	/20	/11	/17	/8	/56

Trigonometry

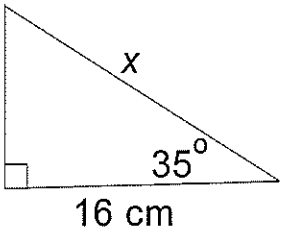
Question 1



Find θ, correct to the nearest minute. **2**

Question 2

Find the value of x in the following triangle (correct to 2 d.p.) **2**

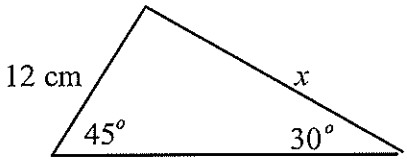


NOT TO SCALE

Question 3

Write down the exact value of $\cos 45^o$ **1**

Question 4 (4 marks)



(a) Find x (give exact values and rationalize your answer) **2**

(b) Hence find the area of this triangle. **2**

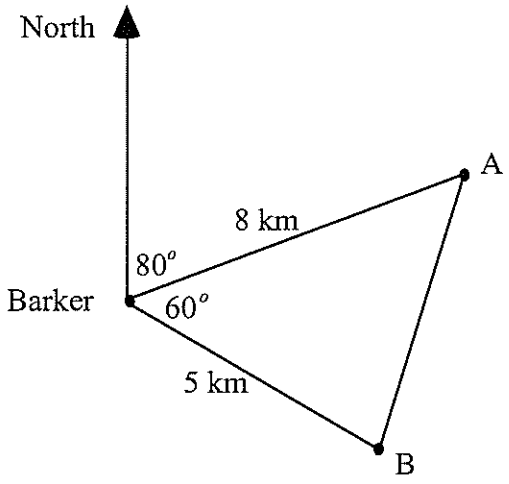
Question 5

Given that $\tan A = \frac{9}{40}$, find the value of $\sin A$, in fraction form. **2**

Question 6

For what value(s) of θ is $\sin\theta = 0.34$, correct to the nearest minute and given $0° \leq \theta \leq 180°$? 2

Question 7



Nicole leaves home at A and walks 8 km to Barker.

Tom leaves home at B and walks 5 km to Barker.

(a) Use the cosine rule to show that the distance AB is 7 km. **2**

(b) What is the bearing of Barker from B? **1**

***Question 8**

For the triangle ABC, AB is 10.1 cm, AC is 4.5 cm and $\angle ABC$ is 25°. **2**
Find all possible values for $\angle ACB$.

***Question 9**

A man leaves a starting point and walks 5 km on a bearing of 125° and then **2**
6 km on a bearing of 80° and arrives at his destination. How far is his destination from his starting point, correct to 1 decimal place?

Coordinate Geometry

Question 1

Here are four straight lines:

A) $y = 4x - 5$

B) $4y = x + 11$

C) $8x - 2y + 3 = 0$

D) $y = -4x$

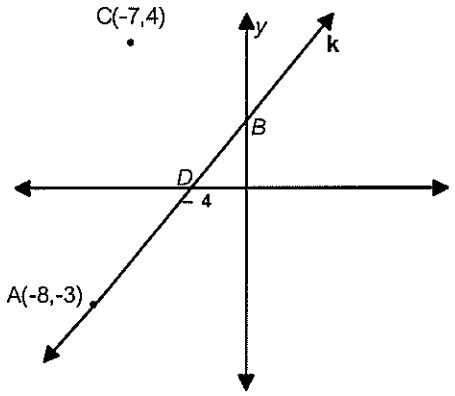
(a) Write down the y-intercept of line A. **1**

(b) Does the point (3, 12) lie on line C? Why or why not? **1**

(c) Pick a pair of parallel lines. **1**

(d) Pick a pair of perpendicular lines. **1**

Question 3



(a) Show that the equation of the line k is $3x-4y+12=0$. **2**

(b) Hence find:

i. the co-ordinates of B; and **1**

ii. the distance AB. **2**

(c) * Show that CD is perpendicular to AB. **2**

Data

Question 1

The following table shows the number of hours of homework completed by a Year 10 class.

Number of hours	2	3	4	5	6	7	8
Number of students	1	2	3	3	8	5	2

(a) How many students are in this class? **1**

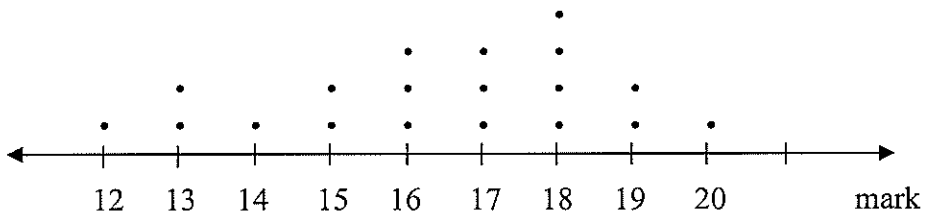
(b) How many students completed less than 5 hours of homework? **1**

(c) What fraction of the class completed 6 hours of homework? **1**

(d) What percentage of the class completed 4 hours of homework? **1**

Question 2

The dot plot below shows the marks obtained in a Year 9 test.



(a) How many pupils sat the test? **1**

(b) What was the modal mark (the mode)? **1**

(c) What was the median mark? **1**

(d) What was the mean mark? **1**

(e) *Find the standard deviation **1**

Question 4

For the following set of scores

3 7 9 5 5 6 2 8 9 7

Find

(i) Q_1 **1**

(ii) Q_2 **1**

(iii) Q_3 **1**

(iv) IQR **1**

Question 3

This back to back, ordered stem and leaf plot shows the marks gained by a Year 9 Maths class before and after revision.

After revision		Before revision
	4	0, 7
4	5	0, 1, 5, 9
	6	3, 3, 3, 4, 8
8 8 7	7	1, 2, 6, 7, 7
9 7 5 5 5 3 0	8	
8 7 2	9	
0 0	10	

(a) Identify the outlier. **1**

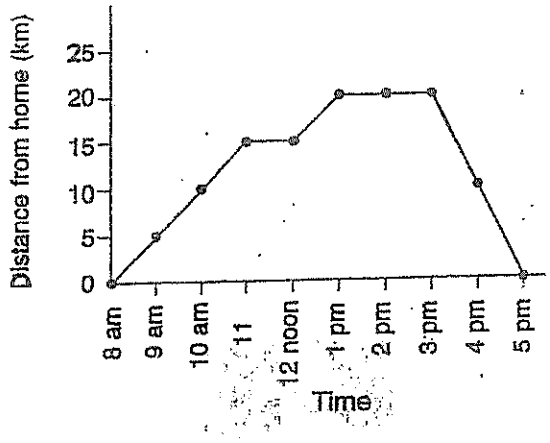
(b) Calculate the range of marks both before and after revision. **2**

(c) The mean mark before revision is $62 \cdot 25$. Calculate the mean mark after revision. **1**

Graph of Physical Phenomenon

Question 1 (2 marks)

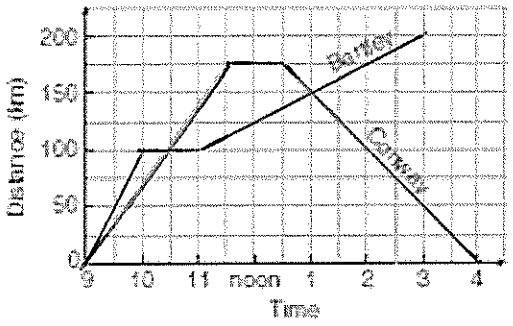
This graph shows Penny's distance from home at each hour on a shopping trip.



(a) What was the total distance travelled by Penny on her journey? **1**

(b) What was the average speed of Penny's return journey? **1**

Question 2



The graph shows the journeys of two motorists, Conway and Bartley. They are travelling on the same road and in the same direction leaving town A at 9:00 am

(a) Who travel the fastest in the first hour ?

1

(b) How many times do they pass each other ?

1

(c) How far apart are they at 3:00pm ?

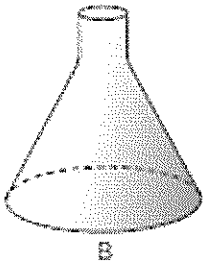
1

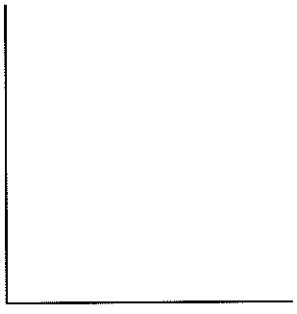
(d) How far did Conway travel ?

1

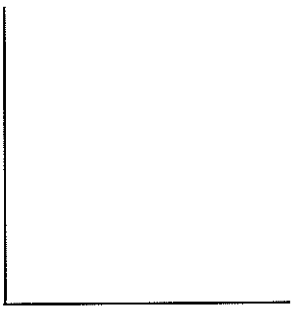
***Question 3**

The two containers are filled with water at a steady rate. Plot a graph of the Water level vs Time graph for each of the containers on the number plane provided





1



1