FILE

Year 8 Half Yearly Exam

Term 2: 2008

NON CALCULATOR SECTION: 10 minutes

CALCULATOR SECTION: 60 minutes

Non Calculator	Multiple Choice	Number and Calculator	Geometry	Percentages
/10	/10	/10	/11	/13

Algebra	Pythagoras	Graphs and Tables
/20	/17	/9

Total

/100

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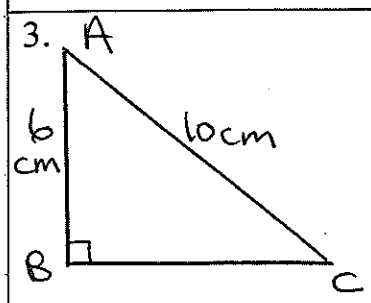
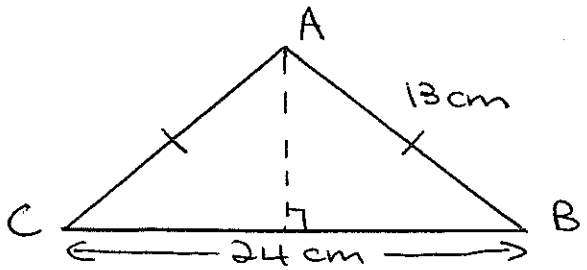
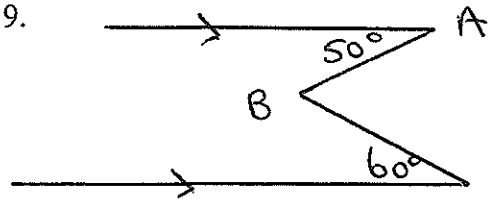
Term 2 2008

NON – CALCULATOR

Time Allowed: 10 minutes

Answer in the spaces provided. (1 mark each)

	ANSWERS
1. There are 51 people travelling to a sports carnival. If each car carries 4 people, how many cars are needed?	
2. $25-3 \times (-4) - 6x2 =$	
3.  Find the perimeter of triangle ABC.	
4. Find the area of triangle ABC. 	
5. Express \$23 as a percentage of \$50.	
6. Increase 30L by 40%.	

7. Expand and Simplify $3\,(x+5) - 2\,(2x+8)$	
8. Factorise $6y + 12$.	
9.  What is the size of the reflex angle ABC?	
10. Draw a diagram of a right angled isosceles triangle.	

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Time Allowed: 60 minutes

Calculators may be used.

For questions 1 – 10, circle the correct answer. (1 mark each)

1. $4x^6 \div 8x^2 =$

   (A) $\frac{x^3}{2}$ (B) $\frac{x^4}{2}$ (C) $2x^3$ (D) $2x^4$

2. In Australia 0.5% of people have a rare blood type.

   There are 20 000 000 people in Australia.

   How many have this rare blood type?

   (A) 10 000 (B) 100 000 (C) 1 000 000 (D) 10 000 000

3. $4x - 3(x - 2) =$

   (A) $x - 2$ (B) $x + 2$ (C) $x - 6$ (D) $x + 6$

4. Tania is taping songs onto a 90 minute cassette tape. She has used $\frac{1}{10}$ of the tape for rock music and $\frac{1}{3}$ for rap music. The amount of time left on her cassette tape is....

   (A) 27 minutes (B) 39 minutes (C) 51 minutes (D) 54 minutes

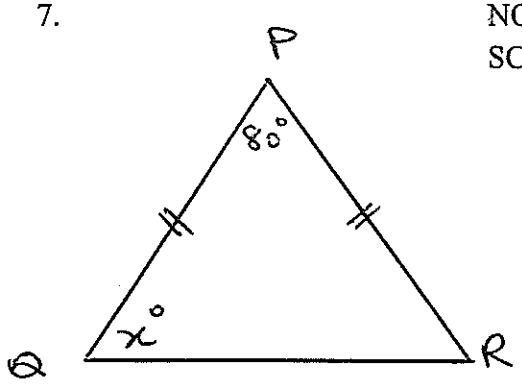
5. A loaf of bread has 22 slices. A sausage sandwich needs 2 slices of bread. 20 people each have 2 sausage sandwiches. The number of loaves needed is:

(A) 2 (B) 3 (C) 4 (D) 5

6. 24 % is closest to

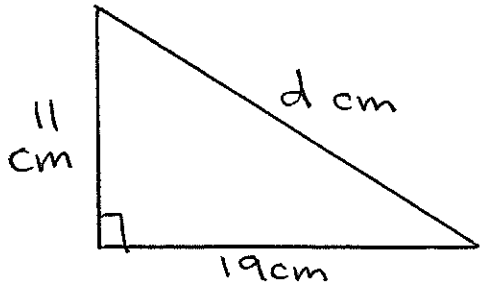
(A) $\frac{1}{24}$ (B) $\frac{1}{5}$ (C) $\frac{1}{4}$ (D) $\frac{1}{3}$

7. NOT TO SCALE



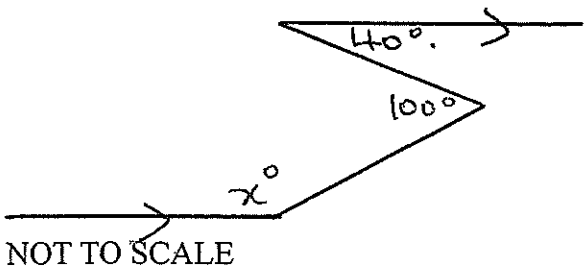
P Q R is an isosceles triangle. The value of x is:
(A) 20
(B) 50
(C) 80
(D) 100

8. NOT TO SCALE



The value of d to the nearest whole number is:
(A) 3
(B) 15
(C) 22
(D) 30

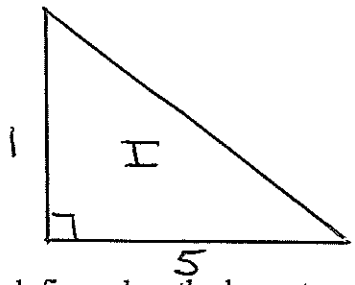
9.

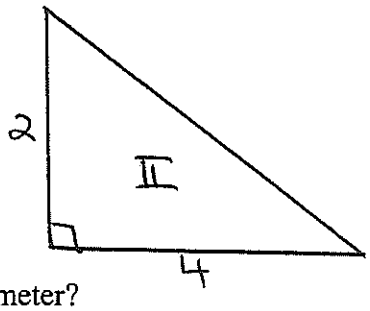


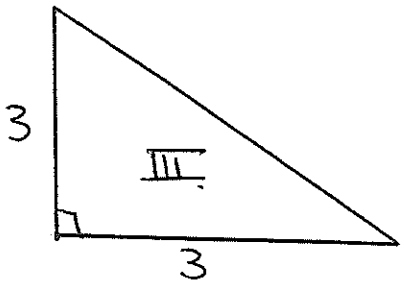
NOT TO SCALE

The value of x is:
(A) 40
(B) 60
(C) 120
(D) 140

10. NOT TO SCALE







Which figure has the largest perimeter?

(A) I (B) II (C) III (D) All three are equal

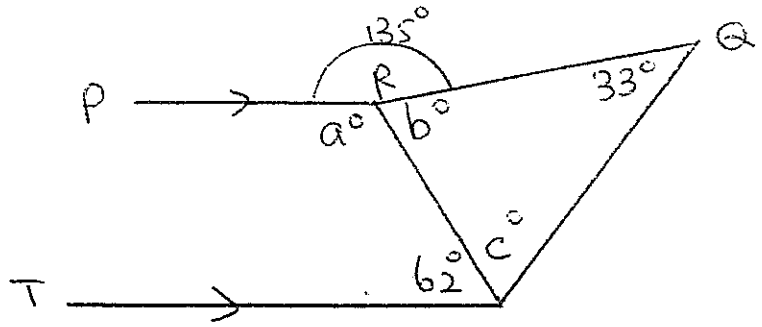
NUMBER AND CALCULATOR (10 MARKS)

ANSWERS and WORKING

1. Find the value of $\frac{2.1 + 6.9}{\sqrt{2.25}}$ (1 mark)	
2. Write 0.002 as a fraction in its simplest form. (1 mark)	
3. An olive tree, on average, produces 120 kgs of olives per year. Each kilogram of olives sells for \$2.50. A) Mrs Mason has 190 olive trees. How much money would she expect from the sale of olives this year? B) Mrs Diakos earned \$91 500 from the sale of her crop. How many kilograms of olives did she produce? (1 mark)	A) B)
4. Maria breathes about 15 times each minute. How many times would she breathe in 7 hours? (1 mark)	
5. A submarine is 15m below sea-level. It dives down a further 20m and fires a missile. Use a directed number to describe the position of the missile (relative to sea-level) when it is 50m above the submarine. (1 mark)	
6. Use your calculator to find the value of $\frac{\sqrt{7} + \sqrt{3}}{2 - 4\sqrt{3}}$ Answer to 1 decimal place (1 mark)	
7. The number on Roula's house is two more than the number on Mick's house. The house numbers add up to 30. What is Mick's house number? (1 mark)	
8. In a choir of 40 students, 24 are girls. What fraction of the choir are boys? (1 mark)	

GEOMETRY (Show all necessary working) (11 marks)

1.



NOT TO SCALE

(4 marks)

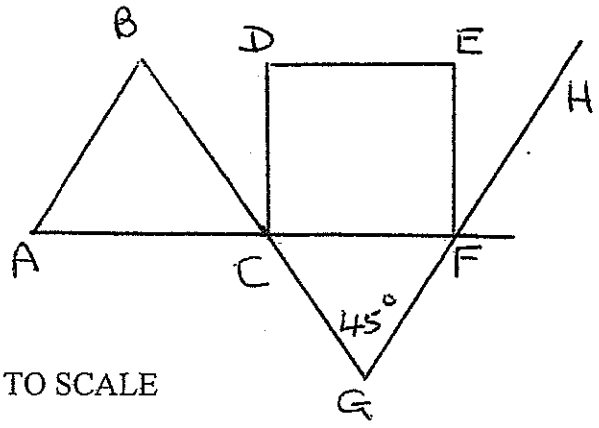
Complete the following statements:

(a) $\alpha = 118°$ [Reason:

(b) b = [Sum of angles at a point is 360°]

(c) c = [Reason:

2.



NOT TO SCALE

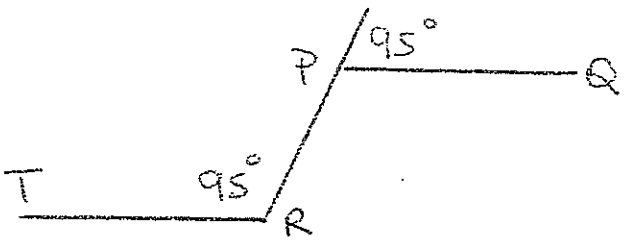
ABC is an equilateral triangle. CDEF is a square. BCG, ACF and GFH are straight lines.

$CGF = 45°$

Find the size of EFH

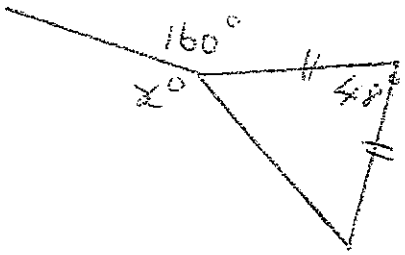
(3 marks)

3. NOT TO SCALE



Is TR // PQ ?
Give a reason for your answer.
(2 marks)

4. NOT TO SCALE



Find the value of x. (2 marks)

PERCENTAGES Show all necessary working (13 marks)

1. For Year 8 reports the class mark makes up 60% of the final mark, while the test mark makes up 40%.

   Monica's class mark is 70% and her test mark is 90%. What is her final mark? (2 marks)

2. At the Pacific Games 5000 people entered the main gate. Of these, 3 500 went to see the swimming and 1500 the gymnastics.
   What percentage of people went to see the gymnastics? (2 marks)

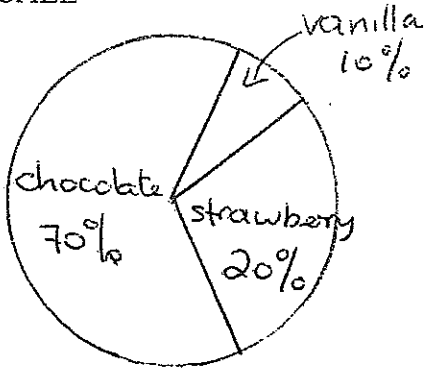
3. Find the simple interest on $500 at 3.5% per annum for 6 months. (2 marks)

4. A store owner buys a jacket for $80, and marks its price tag to make profit of 50%.
   (i) How much profit does he expect to make? (1 mark)

   (ii) At a later date it is sold at 30% off the marked price. How much profit does he actually make? (2 marks)

5. What percentage is 169 of 260? (2 marks)

6. NOT TO SCALE



Year 8 students voted for their favourite milkshake flavour. The results are shown as percentages. What is the size of the angle that would be used for strawberry on the sector graph?

(2 marks)

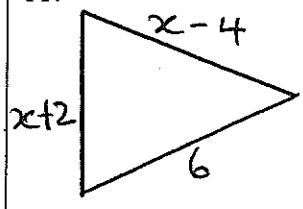
7. The local sports store advertised a 45% discount on all tennis racquets. Chris bought a racquet and paid $88 after the discount.

   (i) What was the original price of the racquet? (2 marks)

   (ii) How much did Chris save? (1 mark)

ALGEBRA **(20 MARKS)**

ANSWERS

1. Factorise $4a + 2ab$ completely (1 mark)	
2. Simplify $3x + 2x^{\circ}$ (1 mark)	
3. $\frac{6}{y} \div \frac{y}{3} =$ (2 marks)	
4. $5a$ x -2b = (1 mark)	
5. $9x - 7y + 4y =$ (1 mark)	
6. Simplify $\frac{a^6 \times (a^8)^2}{a^2}$ (2 marks)	
7. Evaluate $3y^2 + 6y - 7$ when $y = -5$ (2 marks)	
8. $9ab \div 3b =$ (1 mark)	
9. Evaluate $x^2 + xy$ if $x = -3, y = 4$ (2 marks)	
10. $\frac{a^5}{b}$ x $\frac{a^2}{b} =$ (1 mark)	
11.  Write an expression for the perimeter of the triangle. (1 mark)	
12. Simplify $2(a + b) - (2a - b)$ (2 marks)	

13. Simplify $3x^4 \times 5x^2$ (2 marks)	
14. Evaluate $\frac{8x-4}{6-x}$ when $x = -2$ (2 marks)	

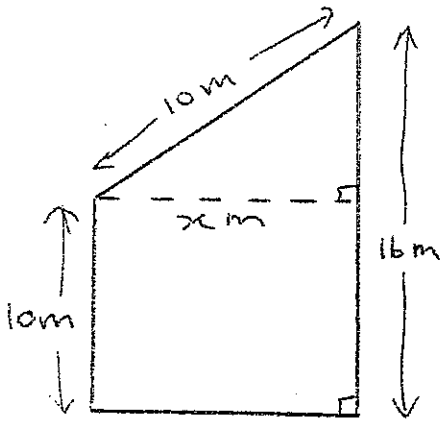
PYTHAGORAS' THEOREM

(17 marks)

1. The size of a television screen is the length of its diagonal.
   Find the size of a television screen with a height of 19 cm and a width of 26 cm.

(2 marks)

2.

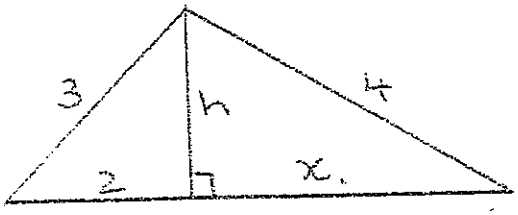


NOT TO SCALE

Find the value of x

(2 marks)

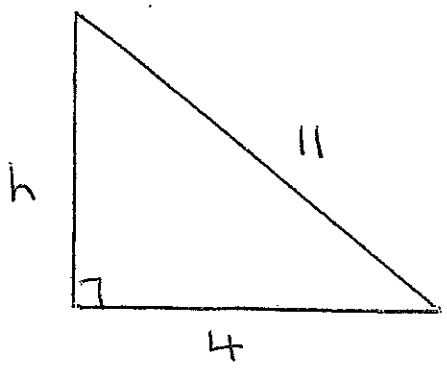
3. NOT TO SCALE



i) Find the value of h to 1 decimal place. (2 marks)

ii) Hence find the value of x to 1 decimal place. (2 marks)

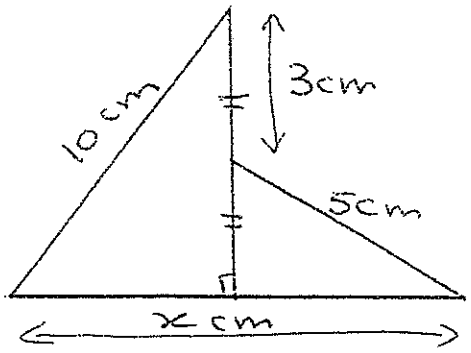
4.



NOT TO SCALE

Find h, leaving your answer as an exact value.
(2 marks)

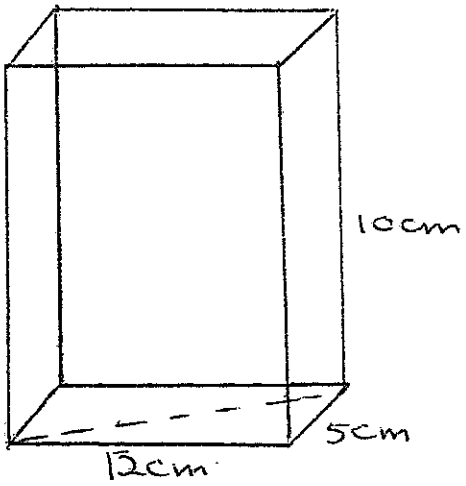
5.



Find the value of x

(3 marks)

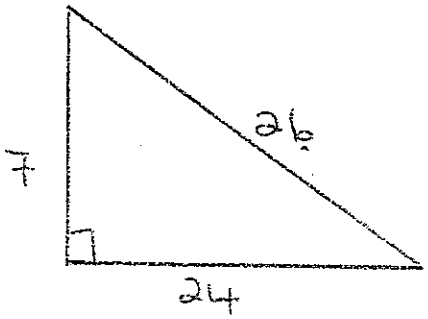
6.



Find the length of the longest pencil which can fit into this rectangular prism.
(Answer to 2 decimal places)

(2 marks)

7.



NOT TO SCALE

Is this triangle right angled or not?
Give a reason for your answer.
(2 marks)

GRAPHS and TABLES

(9 Marks)

1. The table shows the distance a car travels before stopping when the brakes are applied.

Speed (Km/h)	40	50	60	70	80	90	100	110
Stopping Distance (m)	20·6	29·6	38·1	48·5	60·2	73·1	87·2	102·4

Jess is driving her car at a speed of 50 km/h. Ben is driving his car twice as quickly.

Jess and Ben apply their brakes at the same time. How much further than Jess will Ben travel before his car stops? (2 marks)

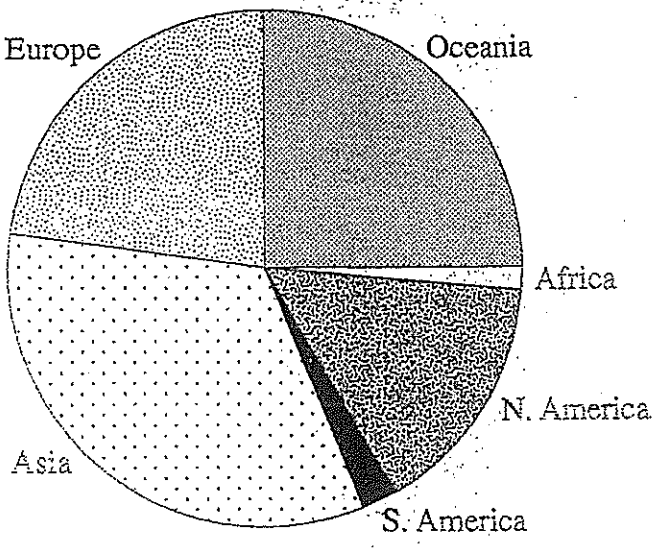
2. PART OF A TRAIN TIMETABLE

Station	p.m.	p.m.	p.m.	p.m.	p.m.
Carter	12:46	1:00	1:06	1:16	1:24
Allenby	–	1:02	–	–	1:26
Firstville	12:51	1:07	1:11	1:21	1:29
Robhurst	–	–	1:17	–	1:35
Kingsland	1:03	1:21	1:26	1:33	1:41
Topware	–	1:35	–	1:47	1:54
Crowton	–	1:37	–	1:49	1:56
Loweville	1:05	–	1:28	–	–
Endcote	1:08	–	1:32	–	–

Blanca left home at 12:50 p.m. It takes her 15 minutes to walk to Carter Station.

What is the earliest time she can arrive at Crowton Station? (1 mark)

3. DESTINATION OF AUSTRALIAN TRAVELLERS

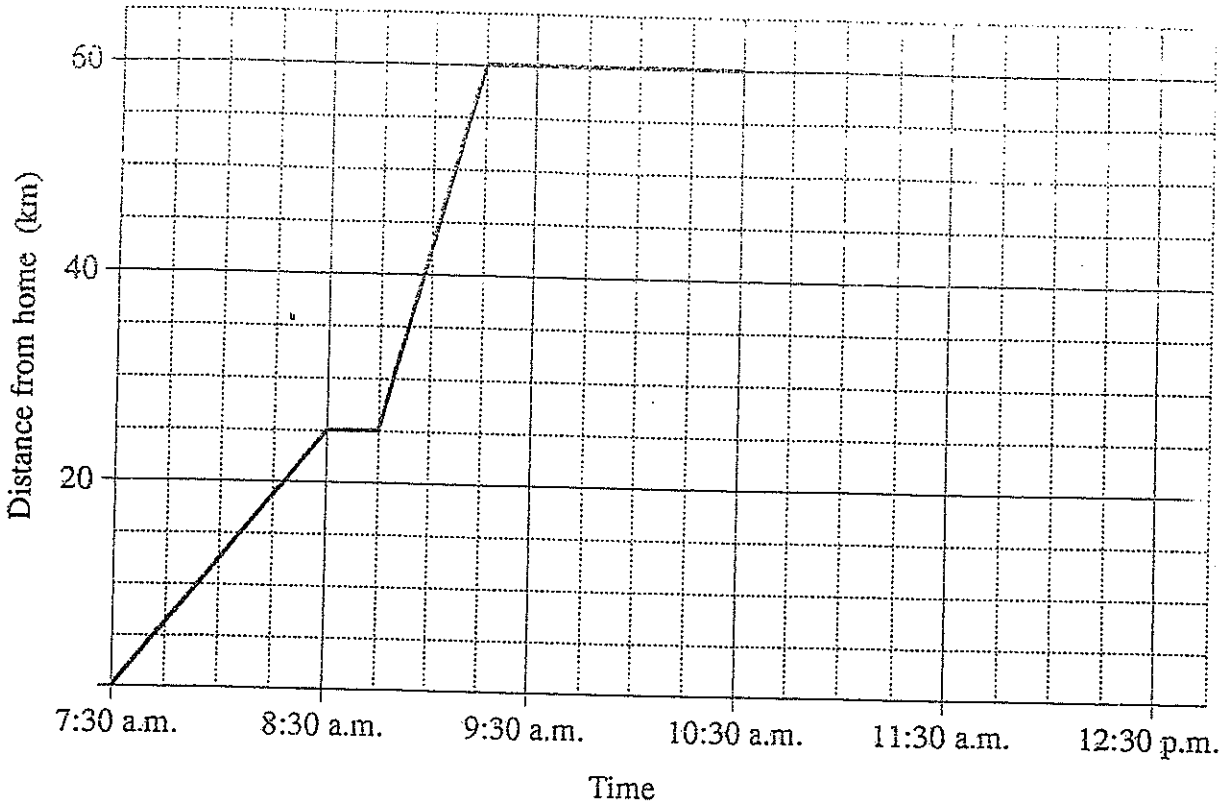


This sector graph represents the destinations of 18 000 Australian travellers.

By measurement and calculation, find the number of Australian (3 marks)

15

4.



Kim left home at 7:30 a.m. and was driven to a railway station. She waited for the next train and caught it to Parramatta for a meeting. The travel graph shows Kim's distance from home that morning.

(a) At what time did Kim's train leave the station?

.....

.....

(1 mar

(b) What distance did Kim travel by train?

.....

.....

(1 mark

(c) The meeting ended at 10:30 a.m. and Kim caught a taxi home. If the taxi travelled at a constant speed of 40 km/h, complete the graph to show the journey home.

(1 mark)

16