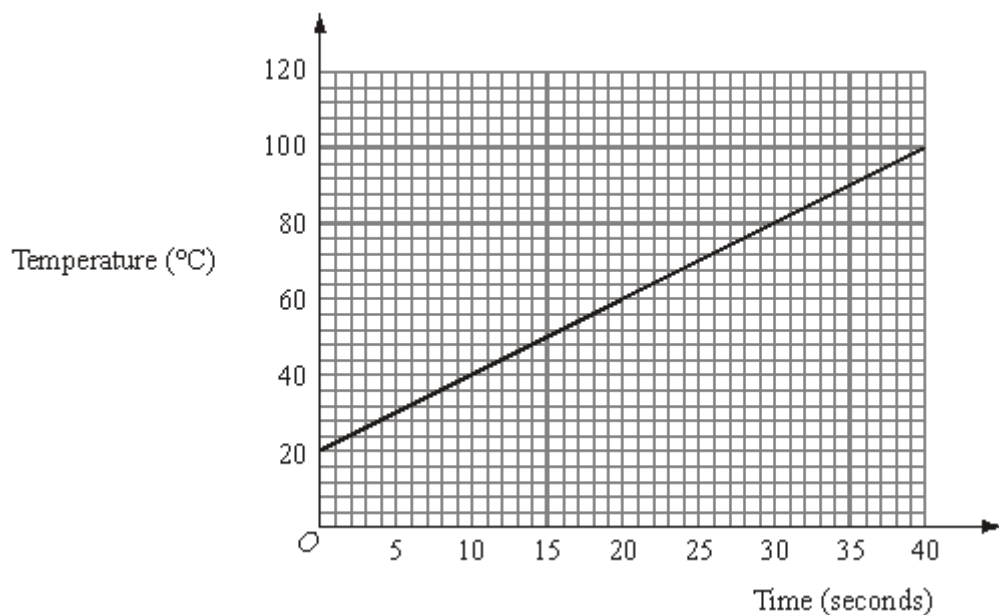


- Q1.** Joe heats some water in a kettle.  
The graph gives information about the temperature of the water in the kettle and the length of time it has been heated.



- (a) Write down the temperature of the water when Joe started to heat the water.

..... °C

(1)

- (b) Use the graph to find how many seconds it took the water to reach a temperature of 70°C.

..... seconds

(1)

- (c) Work out the increase in the temperature of the water from the 10th second to the 35th second.

..... °C

(2)  
(Total 4 marks)

- Q2.** Sarah goes to the gym on her way to work.  
The table shows what she wants to do before arriving at work.

Activity	Time (mins)
Drive from home to gym	10
Exercise at gym	45
Shower and change	20
Drive from gym to work	25

She has to arrive at work at 08 50

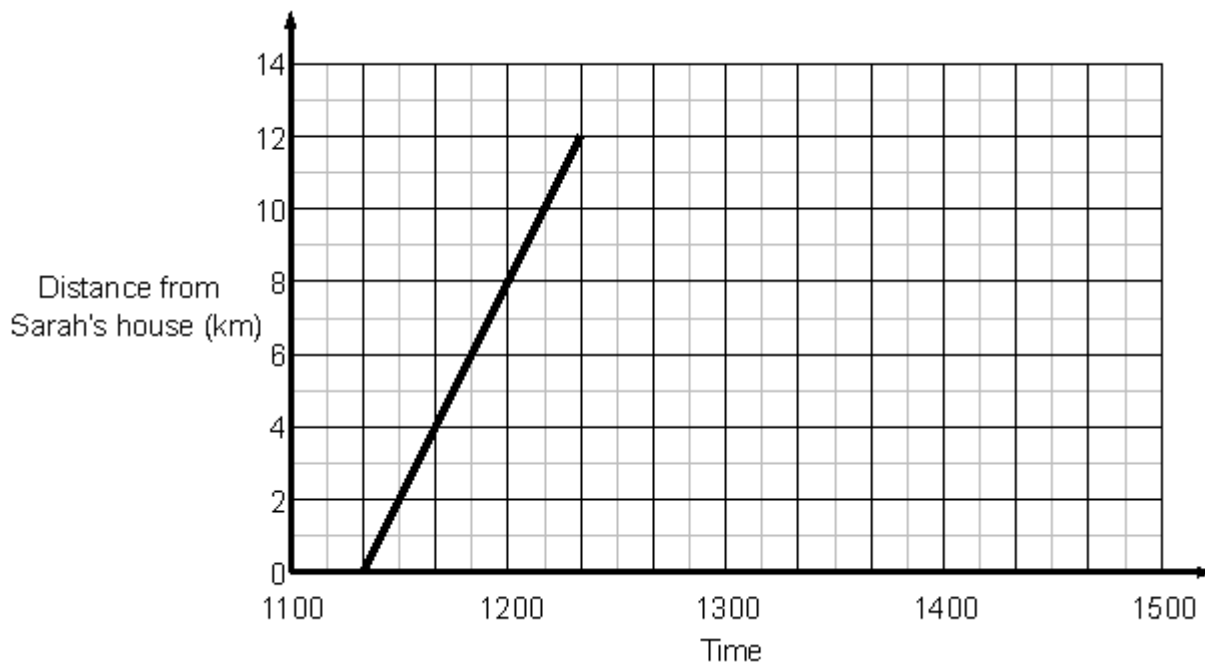
- (a) What is the latest time she can leave home?

.....

(3)

Each Saturday, Sarah cycles from her house to the gym.

The travel graph shows Sarah's journey to the gym.



(b) What time does she leave home?

.....

(1)

(c) How far is the gym from Sarah's house?

..... km

(1)

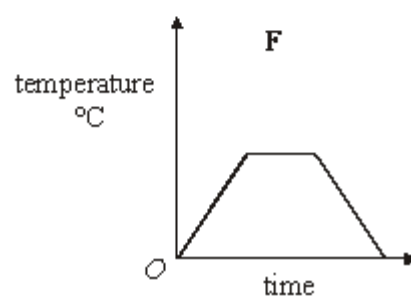
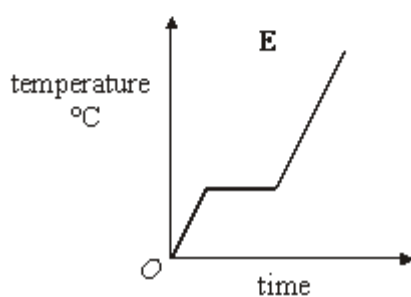
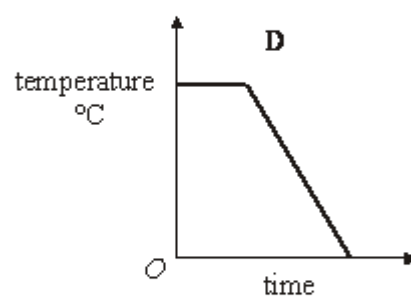
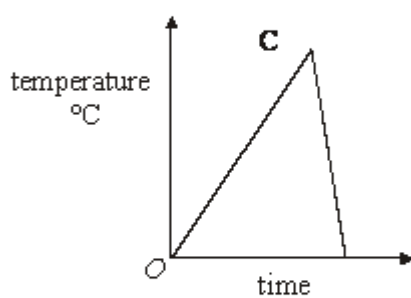
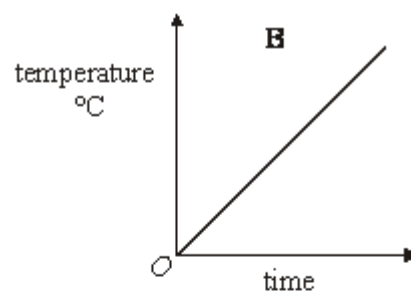
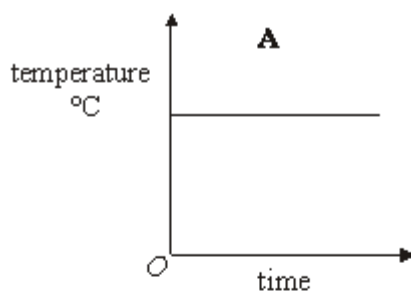
Sarah stays at the gym for  $1\frac{1}{2}$  hours.

She then cycles back to her house at 18 km/h.

(d) Complete the travel graph.

(3)  
(Total 8 marks)

**Q3.** Here are six temperature/time graphs.



Each sentence in the table describes one of the graphs.  
Write the letter of the correct graph next to each sentence.

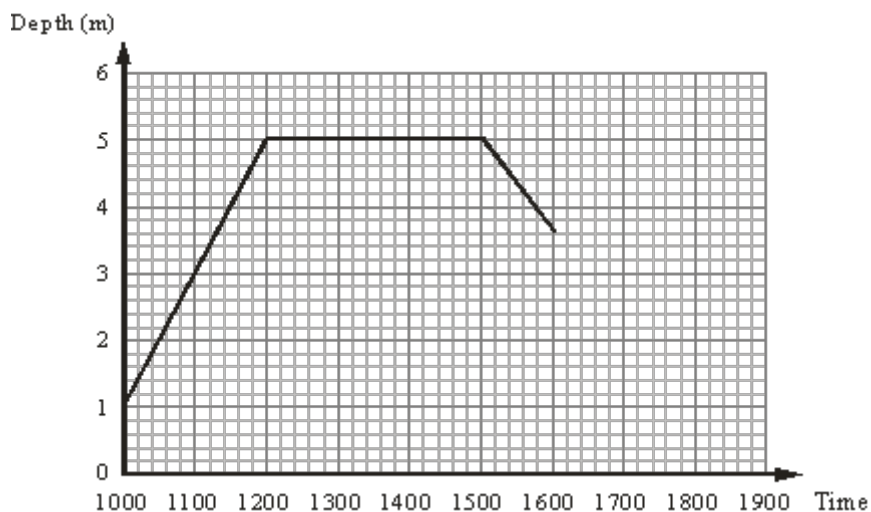
The first one has been done for you.

The temperature starts at 0°C and keeps rising.	<b>B</b>
The temperature stays the same for a time and then falls.	
The temperature rises and then falls quickly.	
The temperature is always the same.	
The temperature rises, stays the same for a time and then falls.	
The temperature rises, stays the same for a time and then rises again.	

(Total 3 marks)

-

**Q4.** Rain water is collected in a tank.  
The graph gives information about the depth of the water in the tank between 1000 and 1600.



(a) Write down the depth of water at 1300.

..... m (1)

(b) Write down the time at which the depth was 2 metres.

..... (1)

After 1600, the water is used for irrigating a field.  
The depth of water continues to fall at the same rate as it fell between 1500 and 1600.

(c) Find the time at which the depth of the water is zero.

..... (1)  
(Total 3 marks)

M1.

	Working	Answer	Mark	Additional Guidance
(a)		20	1	<b>B1</b> cao
(b)		25	1	<b>B1</b> accept answer in range $24 \leq t \leq 26$
(c)	90 - 40	50	2	<b>M1</b> picks 10th and 35th seconds ft $\pm 1$ square, can be implied by sight of $90 \pm 2$ <b>or</b> $40 \pm 2$ , or marks on the graph at (10, 40) <b>and</b> (35, 90) <b>A1</b> (48 to 52 inclusive)
<b>Total for Question: 4 marks</b>				

M2.

	Working	Answer	Mark	Additional Guidance
(a)	10 + 45 + 20 + 25 = 10 1 hour 40 minutes	07 10	3	<b>M1</b> for 10 + 45 + 20 + 25 or 100 seen <b>M1</b> for correct attempt to convert to hours and minutes <b>A1</b> cao <b>OR</b> <b>M2</b> for clear attempt to subtract all times from 08 50 (may be seen as working backwards) ( <b>M1</b> for clear attempt to take at least one time away from 08 50) <b>A1</b> cao
(b)		11 20	1	<b>B1</b> for 11 20 <b>or</b> twenty past eleven oe
(c)		12	1	<b>B1</b> cao
(d)		Straight line from (12 20, 12) to (13 50, 12) and from	3	<b>M1</b> for straight line segment on graph <b>M1</b> for straight line with negative segment

		(13 50, 12) to (14 30, 0)	<b>A1</b> for correct graph <b>or</b> <b>M1</b> for straight line segment on graph <b>M1</b> for $12 \div 18$ oe or 40 minutes seen <b>A1</b> for correct graph SC: B2 for the correct straight line translated to left or right
<b>Total for Question: 8 marks</b>			

**M3.**

Answer	Mark	Additional Guidance
(B), D, C, A, F, E	3	<b>B3</b> all correct <b>(B2</b> for 3 or 4 correct <b>B1</b> for 1 or 2 correct)
<b>Total for Question: 3 marks</b>		

**M4.**

	Working	Answer	Mark	Additional Guidance
(a)		5 m	1	<b>B1</b> cao
(b)		10:30	1	<b>B1</b> 10:25 – 10:35
(c)		18:10 – 18:30	1	<b>B1</b> 18:10 – 18:30
<b>Total for Question: 3 marks</b>				





**E1.** Candidates knew what they had to do with this question and could read the time axis accurately as there was a one to one correspondence between the squares and the numbers. They struggled with reading the intermediate points on the vertical scale where one 2 mm square was  $4^{\circ}\text{C}$ . Only 2% of candidates scored no marks whilst 8% scored 1 mark usually for reading off the  $20^{\circ}$  in part (a). A further 22% scores 2 marks, usually for obtaining correct responses to parts (a) and (b) whilst fully correct responses to all parts were obtained by only 45% of candidates. One mark was awarded in (c) for candidates that marked the required points on the graph or correctly read off the values of 40 or 90.

##

In part (a) candidates adopted two approaches. Some added up the times, and then attempted a subtraction from 08 50, but  $08\ 50 - 100$  required some conversion of minutes into hours and minutes, which some found too difficult. The second method was to start with 08 50 and successively subtract each of the four times, which was far better done. Parts (b) and (c) were well answered. In part (d) two lines needed to be drawn. Most realised that a horizontal section was needed, but of these many terminated the line before 13 50. The majority inserted the correct sloping line, with only a minority drawing a line of incorrect gradient, or of positive gradient (disappearing off the top of the graph).

### **E3. Foundation**

This question was very well answered leading to 92% of candidates being awarded full marks.

### **Higher**

This was very well answered indeed and very few candidates failed to correctly identify each chart.

