

HOME LEARNING

Year 11

Home Learning 2

Focus for this week: Time, Timetables and Speed problems

Essential learning:	<ul style="list-style-type: none">• Comparing 12 hour (am and pm) and 24 hour time
Practising:	<ul style="list-style-type: none">• Reading time-tables• Finding the duration between two times
Learning about:	<ul style="list-style-type: none">• Writing the number of minutes as hours (as a decimal)• Solving distance, speed and time problems
Extension:	<ul style="list-style-type: none">• Column Vectors

Tasks:

- Complete at least two worksheets
- Login to MyMaths and complete MyMaths tasks
- Spend 10 minutes a day on Times Table Rock Stars; Numbots OR Sumdog
- Practise reading and saying the time (to someone else) throughout the day. Say it in different ways (e.g. 25 past 4 in the afternoon; 4:25 pm; 16:25)
- Please email a photo of any worksheets or poster you complete to the email address below.
This will earn you a golden token.

Additional activities:

- Have a time trial: measure a track, time a ball to move along it; calculate the speed
- Design a time-table for your week (or your day)
- Play 'Countdown' (e.g. <https://nrich.maths.org/6499>) on your own or with someone else
- Complete SAM learning Maths tasks
- Do Diagnostic questions or Mangahigh tasks for more challenge (*email Mr.Croft for more info*)
- **More challenge:** Go to <https://corbettmaths.com/wp-content/uploads/2013/02/speed-distance-time-pdf1.pdf> for distance/speed/time exam style questions
- **More challenge:** Go to <https://corbettmaths.com/wp-content/uploads/2013/02/timetables-pdf.pdf> to for time-table exam style questions.

If you have queries about this work, please contact me at acroft@bower-grove.kent.sch.uk

20/4/20 Maths Worksheet 1: 24 hour clock and time-tables

1 Write the following as 24 hour times.

- a) 1:30 pm b) 4:15 am
- c) 10:35 pm d) 2:40 am
- e) 3:50 pm f) 11:23 am

2 Write the following as 12 hour times (use am or pm).

- a) 17:30 b) 11:10
- c) 22:25 d) 05:20
- e) 12:45 f) 19:21

3 Circle the correct time for each of the following.

- a) Joan works each afternoon. She starts work at 02:00 / 14:00
- b) Harvey washes cars each Saturday morning. He starts work at 09:10 / 21:10
- c) Jen washes the lunchtime pots in a café. She starts work at 11:15 / 23:15
- d) Alice works the night-shift at the supermarket. She **finishes** work at 18:00 / 06:00

Credit: AQA Entry Level worksheet 5930 Specification

Bus Stops	Day Times						
St Paul's Cathedral	08:34	10:00	11:45	13:45	14:30	16:30	18:36
Tower Of London	08:46	10:12	11:57	13:57	14:42	16:42	18:48
Tower Bridge	08:48	10:14	11:59	13:59	14:44	16:44	18:50
The Shard	08:56	10:22	12:07	14:07	14:52	16:52	18:58
Tate Modern	09:03	10:29	12:14	14:14	14:59	16:59	19:05
London Eye	09:12	10:38	12:23	14:23	15:08	17:08	19:14
Westminster	09:17	10:43	12:28	14:28	15:13	17:13	19:19
Downing Street	09:23	10:49	12:34	14:34	15:19	17:19	19:25
Buckingham Palace	09:30	10:56	12:41	14:41	15:26	17:26	19:32
Hyde Park	09:38	11:04	12:49	14:49	15:34	17:34	19:40
Oxford Circus	09:45	11:11	12:56	14:56	15:41	17:41	19:47
Piccadilly Circus	09:51	11:17	13:02	15:02	15:47	17:47	19:53
Covent Garden	10:03	11:29	13:14	15:14	15:59	17:59	20:05

4. Answer the following questions:

- a) The bus leaves London Eye at 09:12. What time does it arrive at Covent Garden?
- b) The bus leaves Tower Bridge at 2:44 pm. What time does it arrive at Covent Garden?
- c) The bus arrives at Hyde Park at 7:40 pm. What time did it leave Westminster?

20/4/20 Maths Worksheet 2: Duration between two times and time-tables

1 Jodie started her homework at 5:15
 She it took her 1 hour 30 minutes to complete it. What time did she finish?

.....

2 Jacob got on the train at 1:10 pm
 He got off the train at 2:35 pm How long did his journey take?

.....

3 Ravi wants to arrive at the cinema at 4:45
 If it takes him 35 minutes to walk to the cinema from his home, what time should he set off?

.....

4 A lesson lasting 50 minutes starts at 9.30 am.
 What time does the lesson end?

.....

5 Complete the table to show the start and end times of the following films.

	Start time	Length of film	End time
Fast beyond	7:20	1 hour 15 minutes	.....
Like us	8:45	1 hour 50 minutes	.....
Beyond Hope	.....	1 hour 40 minutes	11:00
Blame Game	6:30	.....	8:10
Never again	.....	2 hours 5 minutes	11:35

20/4/20 Maths Worksheet 3: Time as a decimal

To convert from minutes into hours: $hours = \frac{\text{number of minutes}}{60}$

Example 1 : To convert 45 minutes into hours $45 \div 60 = 0.75$ so 45 minutes = 0.75 hours

Example 2 : To convert 100 minutes into hours $100 \div 60 = 1.666 \dots$
so 100 minutes = 1.67 hours (2 d.p.)

Task A: Convert the following amounts of minutes into hours (as a decimal)

- | | | |
|---------------|---------------|----------------|
| a) 15 minutes | b) 30 minutes | c) 95 minutes |
| d) 44 minutes | e) 8 minutes | f) 320 minutes |
| g) 18 minutes | h) 90 minutes | i) 85 minutes |

Task B: Convert the following amounts of minutes into hours (as a decimal)

You will need to convert from hours and minutes to just minutes (e.g. 1 hour 10 minutes = 60 + 10 = 70 minutes)

- | | | |
|------------------------|-----------------------|-----------------------|
| a) 1 hour 15 minutes | b) 2 hours 30 minutes | c) 1 hour 20 minutes |
| d) 2 hours 44 minutes | e) 1 hour 8 minutes | f) 5 hours 30 minutes |
| g) 10 hours 18 minutes | h) 1 hour 45 minutes | i) 4 hours 15 minutes |

Task C: Convert the number of hours (as a decimal) into minutes (multiply by 60)

- | | | |
|--------------|------------------------|-------------------------|
| a) 0.7 hours | b) 0.1 hours | c) 0.9 hours |
| d) 1.3 hours | e) 3.6 hours | f) 1.25 hours |
| g) 4.5 hours | h) 0.33333333... hours | i) 2.733333333... hours |

Email completed worksheets to me at acroft@bower-grove.kent.sch.uk . Each good attempt earns a golden token.

20/4/20 Maths Worksheet 4: Distance, Speed and Time

To learn about Distance, Speed and Time:

1. Have a look at this website: <https://www.bbc.co.uk/bitesize/topics/z83rkqt/articles/zhbtng8>
2. Watch this video: <http://corbettmaths.com/2016/01/01/speed-distance-time/>

Now answer the following questions using the formula: $Speed = \frac{Distance}{Time}$

Question 1: Calculate the average speeds for each of the following, without using a calculator.

- | | |
|---|--|
| (a) A car travels 60 miles in 2 hours | (b) A lorry travels 120 miles in 3 hours |
| (c) A cyclist travels 45 miles in 5 hours | (d) A jogger travels 30km in 4 hours |
| (e) A runner runs 100 metres in 10 seconds | (f) A car travels 195 miles in 3 hours |
| (g) A helicopter travels 425 miles in 5 hours | (h) A helicopter flies 840 miles in 7 hours |
| (i) A dog runs 216 metres in 12 seconds | (j) An airplane travels 984 miles in 6 hours |
| (k) A bird flies 19 miles in 2 hours | (l) A car travels 600km in 8 hours |

Question 2: Calculate the average speeds for each of the following, without using a calculator.

- | | |
|---|--|
| (a) A car travels 20 miles in 30 minutes | (b) A lorry travels 32 miles in 30 minutes |
| (c) A bird flies 17 kilometres in 30 minutes | (d) A man jogs 2 kilometres in 15 minutes. |
| (e) A helicopter flies 18 miles in 15 minutes | (f) An F1 car travels 32 miles in 15 minutes. |
| (g) A dog runs 3 kilometres in 10 minutes | (h) A jet travels 23 miles in 6 minutes. |
| (i) A car travels 12 miles in 20 minutes | (j) A car travels 9 miles in 12 minutes |
| (k) A motorcycle travels 36 miles in 40 minutes | (l) A car travels 27 kilometres in 45 minutes. |

Question 3: Calculate the average speeds for each of the following.

- (a) A car travels 63 miles in 1 hour 30 minutes
- (b) A man runs 15 miles in 2 hours 30 minutes
- (c) A helicopter flies 238 miles in 3 hours 30 minutes
- (d) A car travels 85.5 miles 2 hours 15 minutes
- (e) An airplane flies 315 kilometres in 1 hour 45 minutes
- (f) A lorry travels 351 miles in 6 hours 45 minutes
- (g) A car drives 154 miles in 2 hours 20 minutes
- (h) A helicopter flies 160 kilometres in 1 hour 40 minutes

Question 4: Calculate the average speeds for each of the following.

- (a) A man jogs 6 miles in 1 hour 12 minutes
- (b) A motorcycle drives 130 miles in 2 hours 36 minutes
- (c) A helicopter flies 152 miles in 1 hour 54 minutes
- (d) A plane travels 1272 kilometres in 5 hours 18 minutes
- (e) A car travels 98 miles in 2 hours 27 minutes
- (f) A rocket travels 750 miles in 3 minutes
- (g) A car travels 6.4 miles in 7 minutes. Give your answer to 2 decimal places.
- (h) A ship sails 105 miles in 4 hours 28 minutes. Give your answer to 2 decimal places.
- (i) A plane travels 400 miles in 1 hour 55 minutes. Give your answer to 2 decimal places.
- (j) A car drives 500 kilometres in 7 hours 13 minutes. Give your answer to 2 decimal places.

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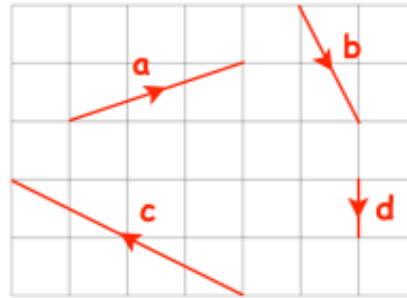
20/4/20 Maths Worksheet 5: Column Vectors

Watch the video on column vectors: <https://corbettmaths.com/2017/09/25/column-vectors/>

Then complete the worksheet (both pages)

Question 1: The vectors **a**, **b**, **c** and **d** are shown on the grid.

- (a) Write **a** as a column vector
- (b) Write **b** as a column vector
- (c) Write **c** as a column vector
- (d) Write **d** as a column vector



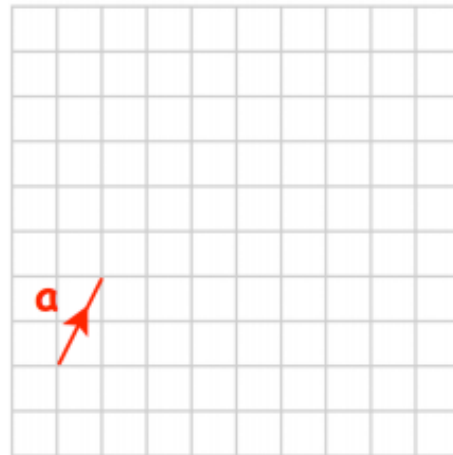
Question 2: On a grid, draw and label the following vectors.

- (a) $\mathbf{a} = \begin{pmatrix} 5 \\ 2 \end{pmatrix}$
- (b) $\mathbf{b} = \begin{pmatrix} -1 \\ 3 \end{pmatrix}$
- (c) $\mathbf{c} = \begin{pmatrix} -3 \\ -7 \end{pmatrix}$
- (d) $\mathbf{d} = \begin{pmatrix} 0 \\ -6 \end{pmatrix}$
- (e) $\mathbf{e} = \begin{pmatrix} 8 \\ -1 \end{pmatrix}$
- (f) $\mathbf{f} = \begin{pmatrix} -4 \\ 0 \end{pmatrix}$

Question 3: Shown on the grid is the vector **a**

$$\mathbf{a} = \begin{pmatrix} 1 \\ 2 \end{pmatrix}$$

- (a) Draw the vector $2\mathbf{a}$ on the grid.
- (b) Write $2\mathbf{a}$ as a column vector
- (c) Draw the vector $3\mathbf{a}$ on the grid.
- (d) Write $3\mathbf{a}$ as a column vector
- (e) Write $5\mathbf{a}$ as a column vector

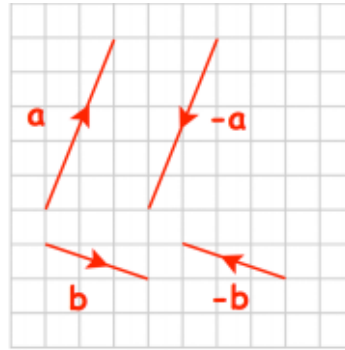


Question 4: Given $\mathbf{a} = \begin{pmatrix} 6 \\ 4 \end{pmatrix}$, $\mathbf{b} = \begin{pmatrix} 3 \\ -2 \end{pmatrix}$ and $\mathbf{c} = \begin{pmatrix} -9 \\ -7 \end{pmatrix}$

Write the following as column vectors

- (a) $3\mathbf{a}$
- (b) $2\mathbf{b}$
- (c) $5\mathbf{c}$
- (d) $\frac{1}{2}\mathbf{a}$
- (e) $\frac{1}{4}\mathbf{b}$

Question 5: Shown on the grid are vectors \mathbf{a} , $-\mathbf{a}$, \mathbf{b} and $-\mathbf{b}$



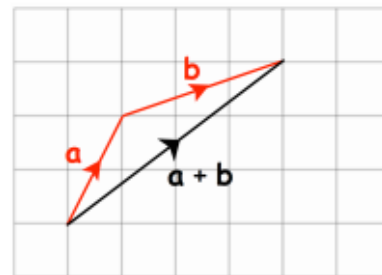
- (a) Write \mathbf{a} as a column vector
- (b) Write $-\mathbf{a}$ as a column vector
- (c) Write \mathbf{b} as a column vector
- (d) Write $-\mathbf{b}$ as a column vector

Question 6: Given $\mathbf{a} = \begin{pmatrix} 2 \\ 11 \end{pmatrix}$ $\mathbf{b} = \begin{pmatrix} -8 \\ 3 \end{pmatrix}$ and $\mathbf{c} = \begin{pmatrix} -4 \\ -6 \end{pmatrix}$

Write the following as column vectors

- (a) $-\mathbf{a}$
- (b) $-\mathbf{b}$
- (c) $-\mathbf{c}$
- (d) $-2\mathbf{a}$
- (e) $-4\mathbf{b}$
- (f) $-\frac{1}{2}\mathbf{b}$

Question 7: Shown on the grid are the vector \mathbf{a} , \mathbf{b} and $\mathbf{a} + \mathbf{b}$



- (a) Write \mathbf{a} as a column vector
- (b) Write \mathbf{b} as a column vector
- (c) Write $\mathbf{a} + \mathbf{b}$ as a column vector

Question 8: Given $\mathbf{a} = \begin{pmatrix} 3 \\ 0 \end{pmatrix}$ $\mathbf{b} = \begin{pmatrix} 2 \\ 7 \end{pmatrix}$ $\mathbf{c} = \begin{pmatrix} 1 \\ 4 \end{pmatrix}$ $\mathbf{d} = \begin{pmatrix} -4 \\ 3 \end{pmatrix}$ and $\mathbf{e} = \begin{pmatrix} -1 \\ -2 \end{pmatrix}$

Work out the following as column vectors

- (a) $\mathbf{a} + \mathbf{b}$
- (b) $\mathbf{b} + \mathbf{c}$
- (c) $\mathbf{a} + \mathbf{c}$
- (d) $\mathbf{c} + \mathbf{d}$
- (e) $\mathbf{b} + \mathbf{e}$
- (f) $\mathbf{d} + \mathbf{a}$
- (g) $\mathbf{e} + \mathbf{d}$
- (h) $2\mathbf{a} + \mathbf{b}$
- (i) $3\mathbf{c} + \mathbf{b}$
- (j) $\mathbf{a} + 5\mathbf{b}$
- (k) $4\mathbf{b} + 3\mathbf{c}$
- (l) $7\mathbf{c} + \mathbf{d}$
- (m) $\mathbf{a} + 2\mathbf{e}$
- (n) $8\mathbf{e} + 3\mathbf{d}$
- (o) $\mathbf{a} + \mathbf{c} + \mathbf{e}$
- (p) $2\mathbf{b} + 3\mathbf{d} + 10\mathbf{e}$