# Higher Check In - 6.02 Algebraic formulae

1. Find the values of  when ,  and .
2. Given that , find *r* in terms of *V* and *h*.
3. A car travels at *u* mph for 1 hour and *v* mph for 2 hours. Write an expression for the average speed of the car.
4. For the following question you may use the formula  where:

time taken initial velocity

acceleration distance travelled.

Find the acceleration of a car that travels from rest for 10 seconds, covering a distance of 250 m.

1. Rearrange  to make *w* the subject.
2. The cost, *C* pence, of *x* oranges and *y* apples is given by the formula . What does the ‘15’ in this formula represent?
3. The length of a rectangle is *l* cm, and the diameter is *d* cm. If the width is *w* cm, show that .
4. Show that the formula can be rearranged to .
5. In triangle *PQR*, *PQ* is 5.2 cm, *QR* is 7.3 cm and angle *PQR* is 35°. Find the area of the triangle, giving your answer to 3 significant figures.
6. *DEFG* is a parallelogram. *DE* is 8 cm, *EF* is 3.5 cm and the diagonal *EG* is 9.2 cm.

Find the size of angle DEG to the nearest degree.

**Extension**

Given the formulae  and , show that .

Answers

1. 0.7 and -0.7
2. 
3. Total distance , total time  hours, so average speed mph.
4. Rearranging to make *a* the subject gives . 
5. 
6. The cost of an orange in pence.
7. Using Pythagoras’ theorem: ; ; .
8. 







1. cm2
2. 22°

**Extension**

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So 

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| **Assessment Objective** | **Qu.** | **Topic** | **R** | **A** | **G** |  | **Assessment Objective** | **Qu.** | **Topic** | **R** | **A** | **G** |
| AO1 | 1 | Substitute positive and negative numbers into a complex formula |  |  |  |  | AO1 | 1 | Substitute positive and negative numbers into a complex formula |  |  |  |
| AO1 | 2 | Rearrange a formula to change the subject where a power of the subject appears |  |  |  |  | AO1 | 2 | Rearrange a formula to change the subject where a power of the subject appears |  |  |  |
| AO1 | 3 | Formulate an expression from a real-world context |  |  |  |  | AO1 | 3 | Formulate an expression from a real-world context |  |  |  |
| AO1 | 4 | Use a kinematic formula to work out acceleration |  |  |  |  | AO1 | 4 | Use a kinematic formula to work out acceleration |  |  |  |
| AO1 | 5 | Rearrange a formula involving algebraic fractions |  |  |  |  | AO1 | 5 | Rearrange a formula involving algebraic fractions |  |  |  |
| AO2 | 6 | Interpret a simple algebraic formula |  |  |  |  | AO2 | 6 | Interpret a simple algebraic formula |  |  |  |
| AO2 | 7 | Recall and use Pythagoras’ theorem |  |  |  |  | AO2 | 7 | Recall and use Pythagoras’ theorem |  |  |  |
| AO2 | 8 | Rearrange a formula to change the subject where the subject appears twice |  |  |  |  | AO2 | 8 | Rearrange a formula to change the subject where the subject appears twice |  |  |  |
| AO3 | 9 | Recall and use the formula for area of a triangle |  |  |  |  | AO3 | 9 | Recall and use the formula for area of a triangle |  |  |  |
| AO3 | 10 | Recall and use the Cosine rule |  |  |  |  | AO3 | 10 | Recall and use the Cosine rule |  |  |  |
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