# Section Check In – AL: Algebra

## Questions

1. Find the coefficient of *x* when multiplying out the expression . [AL1,3]

2 Solve the inequality , giving your answer in terms of  and . [AL7,8]

3. Simplify . [AL2]

4. A sequence of numbers  is given by , .

Find  and  [AL10]

5. Express as a single fraction . [AL2]

6. Express  in the form . [AL5]

7. Use the factor theorem to show that  is a factor of . [AL4]

8. An object is projected vertically upwards from ground level and its height, metres, after  seconds is given by the formula . Show that the object is above a height of metres for approximately  seconds. [AL6]

9. A sequence is given by the rule  . Given that  and , find;

(i) 

(ii) 

(iii)  [AL10]

10. An athlete is training for the London marathon. He runs 7 miles on day 1 and then increases his run by 0.8 miles each day until he can run a complete marathon of 26.2 miles.

On which day of his training does he run the full 26.2 miles? [AL11]

**Extension**

The first 7 terms of a sequence are *a*, *b*, *c*, 12, *e*, *f*, 50. The sequence follows the same rules as the Fibonacci sequence (i.e. the 3rd term is the sum of the 1st & 2nd, the 4th term is the sum of the 2nd & 3rd, etc.). What are the values of *a*, *b*, *c*, *e* & *f* ?

## Worked solutions

1. 

Coefficient of is .

2. 

3. Simplifying, 

4. , , , 

5. 

 oe

6. 



  ,  and 

7. Let 



Since , by factor theorem, using  shows that  is a factor.

8. Times when object is at a height of metres found by substituting 

Equation is  which rearranges to 

Using quadratic formula,  or 

Time above is 

9. (i) 

(ii) 



(iii) Let  and 

, , ,





Solving simultaneously gives 

10.  , , …





**Extension**











Simultaneous Equations





 ,  ,  ,  and 

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