

## 9 Unit test

- 1  $2x^2 - 7x - 15 = 0$  [1]  $(2x + 3)(x - 5)$  [1]  
 $x = 5, x = -1.5$  [1] for both values correct
- 2  $(3x + 1)(3x - 2)$  [2] or [1] for each correct bracket
- 3 a  $x^2 + 2x$  or  $x(x + 2)$  [1]  
 b  $x^2 + 2x - 15 = 0$  [1]  $(x + 5)(x - 3) = 0$  [1]  $x = -5, x = 3$  [1] both values correct

- 4 Substitution into formula attempted [1]  
 $x = 1.22$  [1]  $x = -0.549$  [1] rounded as shown

- 5  $(2x + 6)(2x + 8)$  or  $4x^2 + 28x + 48$  seen [1]  
 $4x^2 + 28x = 32$  or  $4x^2 + 28x - 32 = 0$  seen [1]  
 $(x + 8)(x - 1) = 0$  or  $x = 1$  [1]  
 border is 1 cm wide [1]

- 6 a  $7x = 21$  [1]  $x = 3$  [1]  $y = 2$  [1]

- b Attempt at multiplying equations [1] Equation with one variable eliminated [1]  
 $x = 4$  [1]  $y = -1$  [1]

- 7  $2a + 3p = 1.90$  [1]  $5a + 4p = 3.35$  [1] attempt at cross multiplying both equations [1]  
 One apple costs 35p [1] one pear costs 40p [1]

- 8 a 2 clear steps of working out [2] each,  $y > -1$  [1]

- b Expand the bracket [1]  $\frac{z}{5} < x$  [1]  $x < \frac{3}{14}$  [1]

- 9  $x > 1$  [1]  $x < 3$  [1]  $x = 2$  [1]

- 10 substitution of known values into formula for area of trapezium [1]  
 equate to zero:  $5x^2 + 14x - 6 = 0$  [1] substitute into quadratic formula [1]  
 $x = 0.378$  m to 3 s.f. [1]

- 11 Combine the two equations:  $x^2 - 9x - 2 = 3x - 2$  [1]  
 Equate to zero:  $x^2 - 9x = 0$  [1]  
 $(0, -2)$  [1]  $(9, 25)$  [1]

Sample student answer

- 1 There could end up being 3 or 4 different equations, so it is a good idea to label them to avoid confusion.
- 2 The letters s and l could look like a 5 or 1, which might lead to a mistake.
- 3 The student needs to make it clear how many paper clips are in each box, with a statement like, 'There are 60 paper clips in the small box and 175 paper clips in the large box.'