SOLUTIONS

1. (a)  ✓ ✓

(b)  ✓ ✓ ✓

2. (a)  ✓✓✓ -1/error

(b)  ✓✓

✓



✓

(c)



✓

✓

(d) 5th term= 8C4 (2x)4 (-y)4 = 70 x 16x4 x y4 = 1120 x4 y4

✓ ✓

3. (a) (i) 32, 16, 8, 4, ✓ ✓ -1/error

(ii) 20, 17, 14, 11 ✓ ✓

(b) (i) T1= 150 – 4x1 =146 ✓

T2= 150 – 4x2 =142 ✓

T3= 150 – 4x3 =138 ✓

(ii) Tn+1= Tn – 4, T1= 146 ✓

4. (a) 0.57 ✓ (b) 0.6 ✓✓

**SECTION 2: CALCULATOR ASSUMED**

5.

|  |  |
| --- | --- |
| Solution | |
| Marking key/mathematical behaviours | Marks |
| * Provides a tree diagram where the branches stop after a P (pass) * Has the correct number of attempts * Shows probabilities of pass and fail * Determines the outcomes and associated probabilities | 1  1  1  1 |

**(b)**

|  |  |
| --- | --- |
| Solution  P(pass in two or less attempts) = 0.35 + 0.26 = 0.61 | |
| Marking key/mathematical behaviours | Marks |
| * Provides the two possible outcomes to pass * Adds the two probabilities | 1  1 |

**(c)**

|  |  |
| --- | --- |
| Solution  P(pass in 3 or less attempts/not passed on first attempt) | |
| Marking key/mathematical behaviours | Marks |
| * Displays the correct outcomes/probabilities on the numerator * Displays the correct outcomes/probabilities on the denominator * Calculates the correct answer | 1  1  1 |

**(d)**

|  |  |
| --- | --- |
| Solution    Which approaches zero. Very small probability of continual failure. | |
| Marking key/mathematical behaviours | Marks |
| * Writes out the probability of never passing   Realises the answer approaches 0 | 1  1 |

6. (i) 1/30 ✓ (ii) 3/10 ✓

7. (a) (i) 

 ✓✓

✓

✓

✓



(ii)

✓

✓

✓

✓

✓

✓

(iii) 

✓✓

✓

✓

✓

✓

✓

(b) 



✓

✓

✓

(c)  ✓



✓✓

✓

✓

(d) S1= 10 x4 -10 = 30

S2= 10 x42 -10 = 150

T1= 30 ✓

T2 = 150 -30 = 120 Hence r =120/30 = 4 ✓✓

8

|  |  |
| --- | --- |
| Solution  .  The events and are independent. | |
| Marking key/mathematical behaviours | Marks |
| * Uses independence law * Uses addition law * Evaluates *P*(*T*) | 1  1  1 |