Student Worksheet 1 Solutions
TI-15 Explorer™: Finding Patterns

WS1

Table of Results

When the divisor is 3 and the remainder is 0

Quotient	1	2	3	4	5
Dividend	**3**	**6**	**9**	**12**	**15**

Student Worksheet 2 Solutions
TI-15 Explorer™: Finding Patterns

WS2

Table of Results

When the divisor is 3 and the remainder is 1

Quotient	1	2	3	4	5
Dividend	**4**	**7**	**10**	**13**	**16**

Student Worksheet 3 Solutions
TI-15 Explorer™: Finding Patterns

WS3

Table of Results

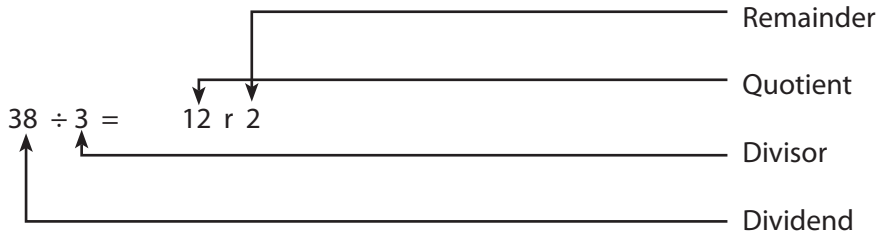
When the divisor is 3 and the remainder is 2

Quotient	1	2	3	4	5
Dividend	**5**	**8**	**11**	**14**	**17**

Student Worksheet 4 Solutions
TI-15 Explorer™: Finding Patterns

WS4

1.



2. a) 5, 8, **11**, **14**, 17, **20**, **23**

Working
5: Int÷ 3 => 1 r 2, 8: Int÷ 3 => 2 r 2
Rule is ×3 + 2

b) **12**, **19**, 26, 33, **40**, **47**, **54**

12: Int÷ 7 => 1 r 5, 26: Int÷ 7 => 3 r 5
Rule is ×7+ 5

c) **15**, 28, 41, **54**, **67**, 80, **93**, **106**

28: nt÷13 => 2r 2, 41: Int÷ 13 => 3 r 2
Rule is ×13+ 2

3.

Divisor = 3 Remainder = 1	
Quotient	Dividend
1	4
2	**7**
3	10
4	**13**
5	**16**
6	**19**

Divisor = 9 Remainder = 5	
Quotient	Dividend
1	14
4	**41**
5	50
8	77
12	113
20	185

Divisor = 13 Remainder = 12	
Quotient	Dividend
1	25
2	**38**
5	**77**
7	103
12	168
20	272

Divisor = Remainder =	
Quotient	Dividend
1	11
2	19
3	27
7	**59**
9	**75**
20	**163**

4. Working
   6: Int÷ 5 => 1 r 1, 21: Int÷ 5=> 4r 1
   Rule is ×5 + 1

   2nd number is 2 × 5 + 1
   3nd number is 3 × 5 + 1
   5th number is 5 × 5 + 1
   6th number is 6 × 5 + 1
   7th number is 7 × 5 + 1
   8th number is 8 × 5 + 1

   So the pattern is 6, 11, 16, 21, 26, 31, 36, 41

Student Worksheet 5 Solutions
TI-15 Explorer™: Finding Patterns

WS5

1. i) 31 38 52 73 318 703 1620

   ii) 20 31 64 97 273 1164 1428

2. There are a lot of different linear patterns that can use given numbers, to be sure of a particular pattern you must specify both the position of the number and the value of the number, (in our exercise the position is the quotient) so not only must the remainders all be the same for a given divisor but the quotients must match the position number. This becomes clearer when students work in reverse ie. Quotient × Divisor = Dividend + Remainder.

3. Rule: × 7 + 5 That is multiply the position number by 7 and add 5 to the answer.

   The 111th number is 111 × 7 + 5 = 782
   The 257th number is 257 × 7 + 5 = 1804
   The 1245th number is 1245 × 7 + 5 = 8720

   NB try to encourage students to use the Operations function on the calculator for these calculations.

4. This can lead to some interesting observations from students.

   In reality there is an infinite number of linear patterns that can be produced from these two numbers.

   If we drew the line y = 38 and the line y = 290 on a grid these would represent all the possible positions of 38 and 290. The possible patterns are represented by any line drawn between these two parallel lines.

Assessment Task Solutions
TI-15 Explorer™: Finding Patterns

ATS

1. a) 5, 8, **11**, 14, **17**, **20**

   b) **7**, 12, **17**, 22, 27, **32**, **37**, **42**

   c) **13**, 24, 35, 46, 57, 68, **79**, **90**

2. a) 23 and 28

   b) 53

   c) 288

3. a) 4

   b) 7

   c) 5

4. a) Multiply the ordinal or position number (n) by 9 and add 4 ($n \times 9 + 1$)

      i) $n \times 3 + 1$

   b) $n \times 6 + 2$

      i) $n \times 3 + 2$ and $n \times 2 + 0$

5. Rule: Number of pavers = Bed number × 2 + 6
   Or P = n ×2 + 6

Garden bed number	Number of pavers
1	8
2	10
3	12
4	14
5	16
6	18
10	26
25	56
250	506