

Student Worksheet 1

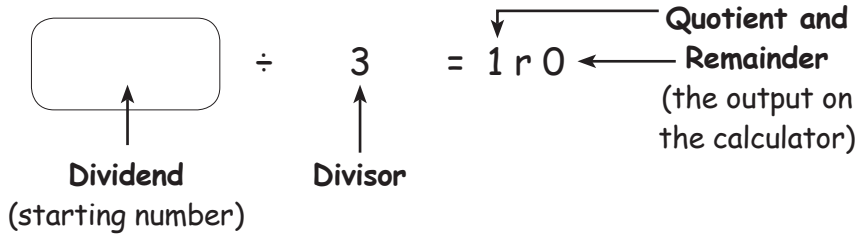
TI-15 Explorer™: Finding Patterns

W1

Name: _____

÷3 and the remainder is always 0

Use a trail and error approach and $\boxed{\text{Int}} \div 3$ to make the TI-15 present the following output displays. When you get it to work, write down the **dividends** (starting numbers) that you entered into the calculator.



Don't forget when you divide use the $\boxed{\text{Int}} \div$ key

$\boxed{} \div 3 = 2 \text{ r } 0$

$\boxed{} \div 3 = 3 \text{ r } 0$

$\boxed{} \div 3 = 4 \text{ r } 0$

$\boxed{} \div 3 = 5 \text{ r } 0$

Table of Results

When the divisor is 3 and the remainder is 0

Quotient	1	2	3	4	5
Dividend					

Student Worksheet 2

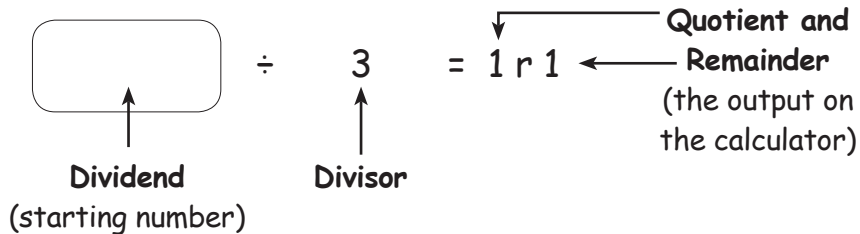
TI-15 Explorer™: Finding Patterns

W2

Name: _____

÷3 and the remainder is always 1

Use a trail and error approach and $\boxed{\text{Int}} \div 3$ to make the TI-15 present the following output displays. When you get it to work, write down the **dividends** (starting numbers) that you entered into the calculator.



Don't forget when you divide use the $\boxed{\text{Int}} \div$ key

$$\boxed{} \div 3 = 2 \text{ r } 1$$

$$\boxed{} \div 3 = 3 \text{ r } 1$$

$$\boxed{} \div 3 = 4 \text{ r } 1$$

$$\boxed{} \div 3 = 5 \text{ r } 1$$

Table of Results

When the divisor is 3 and the remainder is 1

Quotient	1	2	3	4	5
Dividend					

Student Worksheet 3

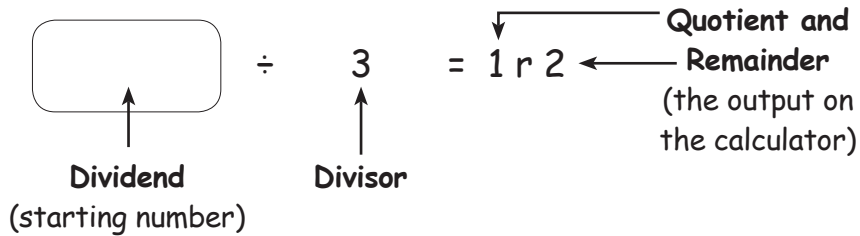
TI-15 Explorer™: Finding Patterns

W3

Name: _____

÷3 and the remainder is always 2

Use a trail and error approach and $\boxed{\text{Int}} \div 3$ to make the TI-15 present the following output displays. When you get it to work, write down the **dividends** (starting numbers) that you entered into the calculator.



Don't forget when you divide use the $\boxed{\text{Int}} \div$ key

$$\boxed{} \div 3 = 2 \text{ r } 2$$

$$\boxed{} \div 3 = 3 \text{ r } 2$$

$$\boxed{} \div 3 = 4 \text{ r } 2$$

$$\boxed{} \div 3 = 5 \text{ r } 2$$

Table of Results

When the divisor is 3 and the remainder is 2

Quotient	1	2	3	4	5
Dividend					

Student Worksheet 4

TI-15 Explorer™: Finding Patterns

W4

Name: _____

1. Carl performs the following calculation on his TI-15 calculator:

$$38 \boxed{\text{int}\div} 3$$

The calculator screen displays the following:

$38 \div 3 =$	$12 \text{ r } 2$	Remainder
		Quotient
		Divisor
		Dividend

Draw a line from the word on the right to the item it describes.
The line from the dividend has been done for you.

2. Use the $\boxed{\text{int}\div}$ key on the TI-15 calculator to help you find the missing numbers.
Remember to divide each number using $\boxed{\text{int}\div}$ instead of $\boxed{\div}$ until you find a divisor that gives you the same remainder each time then use this information to figure out the missing numbers.

Find the missing numbers:

a) 5, 8, _____, _____, 17, _____, _____

b) _____, _____, 26, 33, _____, _____, _____

c) _____, 28, 41, _____, _____, 80, _____, _____

Student Worksheet 4

TI-15 Explorer™: Finding Patterns

W4

3. Complete the tables:

Divisor = 3 Remainder = 1		Divisor = 9 Remainder = 5		Divisor = 13 Remainder = 12		Divisor = Remainder =	
Quotient	Dividend	Quotient	Dividend	Quotient	Dividend	Quotient	Dividend
1	4	1	14	1	25	1	11
2		4		2		2	19
3	10		50	5		3	27
4			77	7	103	7	
5			113		168	9	
6			185		272	20	

4. The first number in a linear number pattern is 6 and the 4th is 21.
Find the pattern up to the 8th number.

Student Worksheet 5

TI-15 Explorer™: Finding Patterns

W5

Name: _____

1. Lisa uses this rule to work out a linear number pattern.

Multiply the ordinal or position number by 3 and then add 2.

The first three numbers of her pattern are 8, 13, 18. What is the 4th number?

Use the Operations Key of the TI 15 calculator to work out the following:

Remember to first clear your calculator memory by pressing the On and the Clear keys simultaneously then press clear. Then program your calculator by pressing $\text{Op}| \times | 3 | + | 2 | \text{Op}|$, this will now multiply your given number by 3 and add 2 to the answer.

Now if you press 4 $\text{Op}|$ you will get the 4th number. Try some more.

- i) If the rule is multiply the position number (ordinal) by 7 and add 3.
What are the 4th, 5th, 7th, 10th, 45th, 100th and the 231st numbers?

- ii) If the rule is multiply the position number (ordinal) by 11 and add 9.
What are the 1st, 2nd, 5th, 8th, 24th, 105th and the 129th numbers?

Liam and Tiffany were trying to find a rule for the following pattern:

Position	1st	2nd	3rd	4th		6th				10th
Number	12	19	26	33		47				75

Liam said that to work out the rule you used $\text{Int} \div$ and different divisors until you got one that gave you the same remainder for all the numbers. Then the rule was:

$\times (\text{divisor}) + (\text{remainder})$.

Tiffany said that was probably right most of the time but to be sure the quotient had to match the position number as well.

Student Worksheet 5

TI-15 Explorer™: Finding Patterns

W5

2. Can you explain what Liam and Tiffany meant and are they right?
Can you give some examples to support your argument?

3. What is the Rule for the pattern? Use the Operations Key on your TI-15 calculator to work out the 111th number, the 257th number and the 1245th number.

4. **Extension:**

38 and 290 are two numbers in the same linear number pattern.
Write down everything you can discover about this pattern.
