

Name: Class:

What is true about the pattern made by the rule?

a. Given that the first number in a pattern is 9 and the rule is to multiply by 3, state two facts that are true for this pattern.

b. Given that the first number in a pattern is 8 and the rule is to add 4, state two facts that are true for this pattern.

c. Given that the first number in a pattern is 72 and the rule is to subtract 7, state two facts that are true for this pattern.

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What is true about the pattern made by the rule?

- a.** Given that the first number in a pattern is 9 and the rule is to multiply by 3, state two facts that are true for this pattern.

First we need to use the rule to find additional numbers in the pattern.

The rule is **multiply by 3**

If the first number is 9, then the next numbers will be

$$9 \times 3 = 27, 27 \times 3 = 81, 81 \times 3 = 243, \dots$$

The pattern is 9, 27, 81, 243, ...

Secondly, analysing the pattern we notice that,

- All the numbers in the pattern are divisible by 9.
- All the numbers in the pattern are odd.

- b.** Given that the first number in a pattern is 8 and the rule is to add 4, state two facts that are true for this pattern.

The rule is **add 4**

If the first number is 8, then the next numbers will be

$$8 + 4 = 12, 12 + 4 = 16, 16 + 4 = 20, 20 + 4 = 24, 24 + 4 = 28, 28 + 4 = 32, \dots$$

The pattern is 8, 12, 16, 20, 24, 28, 32, 36, ...

- All the numbers in the pattern are multiples of 4
- All the numbers in the pattern are divisible by 4
- All the numbers in the pattern are even.

- c.** Given that the first number in a pattern is 72 and the rule is to subtract 7, state two facts that are true for this pattern.

The rule is **subtract 7**

If the first number is 72, then the next numbers will be

$$72 - 7 = 65, 65 - 7 = 58, 58 - 7 = 51, 51 - 7 = 44, 44 - 7 = 37, \dots$$

The pattern is 72, 65, 58, 51, 44, 37, ...

- the ones digit of the numbers in the pattern switch between even and odd
- All the numbers in the pattern are composite.