

1. Write as a fraction

a. $0.\overline{52}$, b. $0.5\overline{2}$, c. 0.52, d. $0.1\overline{25}$, f. $0.\overline{125}$, g. 0.125

2. The sorcerer used seaweed and mushrooms in a ratio of 5 to 2 when brewing a potion. How much seaweed does he need if there are only 450 grams of mushrooms?

3. x is a natural number.

Among following statements 3 are true and 2 are false.

$2 \cdot x$ is greater than 70

x is less than 100

$3 \cdot x$ is greater than 25

x is not less than 10

x is greater than 5

What is x ?

4. It is known that $a + 1$ is divisible by 3. Prove that $4 + 7a$ is divisible by 3 as well.

5. Compare:

Example: What is greater 31^{11} or 17^{14} ?

We can see that $31 < 32 = 2^5$; $2^4 = 16 < 17$,

$$31^{11} < 32^{11} = (2^5)^{11} = 2^{55}$$

$$(17)^{14} > 16^{14} = (2^4)^{14} = 2^{56}$$

We can write the following:

$$31^{11} < 32^{11} = 2^{55} < 2^{56} = 16^{14} < (17)^{14}$$

$$31^{11} < 17^{14}$$

a. 127^{23} and 513^{18}

b. 9997^{10} and 100003^8

c. 5^{300} and 3^{500}

6. Write the following numbers as the power of base 10:

a. 10, 100, 1000, 10000, 100000, 1000000

b. 0.1, 0.01, 0.001, 0.0001, 0.00001, 0.000001