

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