

1. What digits should be put instead of * to get true equality? How many solutions does each problem have?

a. $(2 *)^2 = ** 1$;

b. $(3 *)^2 = ** 1$

c. $(3 *)^2 = *** 6$

d. $(7 *)^2 = *** 5$

e. $(2 *)^2 = ** 9$,

f. $(4 *)^2 = *** 4$

2. Write the number which extended form is written below;

Example: $2 \cdot 10^3 + 7 \cdot 10^2 + 2 \cdot 10^1 + 6 \cdot 10^0 = 2726$;

a. $2 \cdot 10^3 + 4 \cdot 10^2 + 5 \cdot 10^1 + 8 \cdot 10^0$;

b. $7 \cdot 10^3 + 2 \cdot 10^2 + 0 \cdot 10^1 + 1 \cdot 10^0$;

c. $9 \cdot 10^3 + 3 \cdot 10^1 + 3 \cdot 10^0$;

e. $4 \cdot 10^3 + 1 \cdot 10^2 + 1 \cdot 10^1 + 4 \cdot 10^0$;

3. Represent numbers as a power of 10:

Example: $1000^3 = (10^3)^3 = 10^{3 \cdot 3} = 10^9$

100^2 ; 100^3 ; 100^4 ; 100^5 ; 100^6 ;

4. What should be the exponent for the equation to hold?

a. $8^* = 512$; b. $2^* = 64$; c. $3^* = 81$; d. $7^* = 343$

5. Reduce the fractions

a. $\frac{49^4 \cdot 7^5}{7^{12}}$ b. $\frac{3^{10} \cdot 27}{81^3}$; c. $\frac{125^3 \cdot 5^7}{5^{18}}$;

6. Evaluate:

$$\left(1\frac{2}{5} + 3.5 : 1\frac{1}{4}\right) : 2\frac{2}{5} + 3.4 : 2\frac{1}{8} - 0.35;$$

(Answer is 3)

7. John solved several problems as shown in the picture.

Did he perform the calculations correctly? Explain where he made mistakes and complete the calculations correctly.

$$\begin{array}{r} 190 \\ \times 160 \\ \hline 114 \\ + 19 \\ \hline 3040 \end{array} \quad \begin{array}{r} 109 \\ \times 23 \\ \hline 307 \\ + 208 \\ \hline 2387 \end{array} \quad \begin{array}{r} 14 \\ 6 \overline{) 624} \\ \underline{-6} \\ 24 \\ \underline{-24} \\ 0 \end{array}$$

8. Two trains left simultaneously toward each other from two cities that are 495 km apart. They met 3 hours later. What is the speed of each train if it is known that the speed of one of them is 5 km/h greater than the speed of the other?