

Math 5b, homework 3.



1. Prove that $4^3 + 2^4$ is divisible by 5, $25^5 - 5^8$ is divisible by 6

2. Write as a power:

Example:

$$\frac{1}{2} = 2^{-1}; \quad \frac{1}{4} = \frac{1}{2^2} = 2^{-2}$$

$$\frac{1}{3}; \quad \frac{1}{25}; \quad \frac{1}{27}; \quad \frac{1}{125};$$

3. Evaluate:

$$\begin{array}{cccccc} 2^5; & (-2)^5; & -2^5; & 3^4; & (-3)^4; & -3^4 \\ 0.2^6; & (-0.2)^6; & -0.2^6; & 0.05^2; & (-0.05)^2; & -0.05^2 \\ 10^7; & (-10)^7; & -10^7; & 0.1^3; & (-0.1)^3; & -0.1^3 \end{array}$$

4. Express the following numbers as power:

$$128; \quad -128; \quad 0.0016; \quad -0.0016; \quad 0.0009; \quad -0.0009$$

5. The population of a town increased by **10%** in the first year, and then by another **20%** in the second year. By what overall percentage did the population increase over two years?

6. 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 ?

7. Evaluate (try to do it by the easiest possible way) :

$$\frac{7777777 \cdot 7777777}{1 + 2 + 3 + 4 + 5 + 6 + 7 + 6 + 5 + 4 + 3 + 2 + 1} - \frac{5555555 \cdot 5555555}{1 + 2 + 3 + 4 + 5 + 4 + 3 + 2 + 1}$$

