Year 5 reasoning examples

Times Right

Stage: 3 and 4 Challenge Level: ★★★

□□ x □□ = □□□□

Fill these boxes with the digits 1, 2, 3, 4, 5, 6, 7 and 8 using each digit only once, so that the expression is correct. How many different solutions can you find?

Is it possible to do this with the digits 0 to 7? What about using the digits 2 to 9?

Captain Conjecture says, 'If you keep subtracting 3 from 397 you will eventually reach 0.'

Do you agree?
Explain your reasoning.

Always, Sometimes, Never…..

Numbers always have an even number of factors?

Prove and explain your answer

- Harris is finding the missing numbers in this sequence.

_, _, 5, _, _, -5

He writes down:

15, 10, 5, 0, -0, -5

Explain the mistake Harris has made.

Captain Conjecture says, 'When working with whole numbers, if you add two 2-digit numbers together the answer cannot be a 4-digit number.'

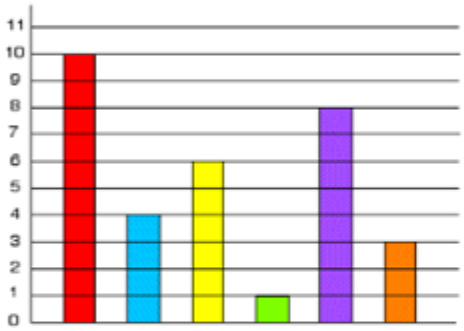
Do you agree?
Explain your reasoning.

The Pet Graph

Stage: 2 ★

Tim's class collected information about all their pets. They have six different kinds of pets between them.

This is the block graph they are making to show how many of each pet the class has altogether.



The children have not yet put in the animal names under each column. Can you do this for them using the information below?

"

There are two less cats than dogs.
Only one child has a parrot at home.
The number of fish added to the number of gerbils is equal to the number of dogs.
There are twice as many fish as hamsters.
There are half the number of gerbils as there are cats.

"

True or False

Giving reasons, explain whether the following are true or false:

Seven less than four is minus three.

-7 + 12 = -19

16 more than -4 is -12.

The temperature is -7°C outside and 17°C inside. The difference is 10°C.

- In this problem decimal numbers have been replaced with symbols.
  What is the value in each box if:

$\frac{1}{10}$ = ★

$\frac{1}{100}$ = ▲

$\frac{1}{1000}$ = ▬