

COUNTDOWN CHALLENGE

The Number Devil: Third Night

The Number Devil introduced Robert to prima donna and garden-variety numbers. We call them prime (only 2 factors) and composite (more than 2 factors). Robert found the first 15.

2 3 5 7 11 13 17 19 23 29 31 37 41 43 47

The Number Devil gave Robert 2 tricks.

TRICK #1 (also known as Bertrand's Postulate)

1. Choose any number.
2. Double that number.
3. There will be at least 1 prime number between the two numbers

	Double	Prime # between
$5 * 2 =$	10	7
$6 * 2 =$	12	7, 11
$7 * 2 =$	14	11, 13
$8 * 2 =$		
$9 * 2 =$		
$10 * 2 =$		
$20 * 2 =$		

TRICK #2 (also known as Goldbach's Theorem)

Every even number greater than 4 can be expressed as the sum of 2 primes.

$$6 = 3 + 3$$

$$18 = _ + _$$

$$8 = 5 + 3$$

$$20 =$$

$$10 = 5 + 5$$

$$22 =$$

$$12 = 7 + 5$$

$$24 =$$

$$14 = 7 + 7$$

$$26 =$$

$$16 = 13 + 3$$

$$30 =$$

TRICK #3

Any number greater than 5 can be expressed as the sum of 3 prime numbers.

$$6 = 2 + 2 + 2$$

$$20 =$$

$$7 = 2 + 2 + 3$$

$$30 =$$

$$8 = 3 + 3 + 2$$

$$40 =$$

$$8 = 2 + 3 + 3$$

$$50 =$$

$$9 = 3 + _ + _$$

$$60 =$$