Name: _____ Date: _____

Identify the Prime Numbers from 1 to 50

A reduce fractions to lowest term exercise

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50

Cross through number procedure:

1. Eliminate 1
2. Eliminate even numbers of 2
3. Eliminate multiples of 3 above 3
4. Eliminate multiples of 5 above 5
5. Eliminate multiples of 7 above 7

List the set of prime numbers from 1 to 50:

{ }

Find the Prime Factors of Any Number

We can express any whole number as a factor of prime numbers. For example, we can take 24 and factor it.

$$24 = 2 \times 12$$

$$2 \times 12 = 2 \times 2 \times 6$$

$$2 \times 2 \times 6 = 2 \times 2 \times 2 \times 3$$

So 24 can be represented as $2 \times 2 \times 2 \times 3$ or $2^3 \times 3$. This will be useful when reducing a fractions to lowest terms,

World Class CAD Challenge: Find the prime factors of these numbers.

1	36	2	49
3	52	4	72
5	86	6	64
7	144	8	176
9	314	10	254

Reduce a Fraction to Lowest Terms

From the procedure we just learned, we can convert the numerator and denominator to prime numbers.

$$\frac{48}{216}$$

$$48 = 2 \times 24$$
$$48 = 2 \times 2 \times 12$$
$$48 = 2 \times 2 \times 2 \times 6$$
$$48 = 2 \times 2 \times 2 \times 2 \times 3$$

$$216 = 2 \times 108$$
$$216 = 2 \times 2 \times 54$$
$$216 = 2 \times 2 \times 2 \times 27$$
$$216 = 2 \times 2 \times 2 \times 3 \times 9$$
$$216 = 2 \times 2 \times 2 \times 3 \times 3 \times 3$$

So we can rewrite the fraction as:

$$\frac{2 \times 2 \times 2 \times 2 \times 3}{2 \times 2 \times 2 \times 3 \times 3 \times 3}$$

And we can cross out like terms:

$$\frac{\cancel{2} \times \cancel{2} \times \cancel{2} \times 2 \times \cancel{3}}{\cancel{2} \times \cancel{2} \times \cancel{2} \times 3 \times 3 \times \cancel{3}}$$

We reduce the fraction to:

$$\frac{2}{9}$$

How can we use dividing the numerator by the denominator to check our work?

$\frac{48}{216}$	$\frac{2}{9}$

World Class CAD Challenge 25–6: Find the lowest terms of these fractions using prime numbers.

1	$\frac{42}{92}$
2	$\frac{8}{84}$
3	$\frac{27}{63}$
4	$\frac{20}{135}$
5	$\frac{312}{524}$