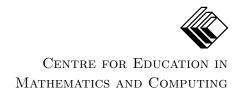
# WATERLOO

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# Grade 6 Math Circles

Winter 2019—April 2 & 3 **Jeopardy** 

### **Answers:**

## Counting:

 $$100: 6^6 = 46656$  ways.

\$200: 6! = 720 ways.

\$300:  $_8P_4 = 1680$  groups.

\$400:  ${}_{8}C_{4} = 70$  ways.

\$500:  $\frac{8!}{2!} = 20160$  arrangements.

## Exponents (calculators were not permitted for this category):

 $$100: 5^5 = 3125.$ 

\$200:  $2^{-10} = \frac{1}{2^{10}} = \frac{1}{1024}$ .

 $\$300: 3^7 = 2187.$ 

 $$400: 4^6 = 4096.$ 

 $$500: 2^1 = 2.$ 

#### **Platonic Solids:**

\$100: 12 sides.

\$200: 20 sides.

\$300: A cell.

\$400: 8 cells.

\$500: 16 vertices.

## Arithmetic Tricks (calculators were not permitted for this category):

\$100: 638.

\$200: 4653.

\$300: 30785.

\$400: 84915.

\$500: 3551.

#### Angles:

100: An angle between  $180^{\circ}$  and  $360^{\circ}$ .

\$200: Complementary.

\$300: 60°.

\$400:  $a = 58^{\circ}, b = 48^{\circ}, c = 74^{\circ}, d = 122^{\circ}.$ 

\$500:  $x = 116^{\circ}$ 

#### Units and Dimensions:

\$100: Mass times length divided by time, divided by time.

\$200: According to the SI, they are: length, time, mass, electric current, absolute tempera-

ture, amount of substance, and luminous intensity.

\$300: 10000 dm.

 $400: 1\ 000\ 000\ 000\ 000\ 000\ ncd.$ 

 $500: 430\ 859\ 520\ 000\ 000\ 000\ s.$