Breaking the Codes

Premise:
Alfred was presented with a six digit code. He got lucky. How many combinations were there, really?

Skills:
Powers
Multiplication practice

Lesson:
Students will determine the number of possible passwords given various situations. Examples are below. To ramp up the level, other conditions can be added such as the first digit must be a zero or one, no letter can be repeated, no zeroes since they look like O, etc..

How many possible passwords are there for a four digit code made up of letters? Five digit? Six? Eight?

What about just numbers in a four digit code? Five? Six? Eight?

Numbers and Letters for a four digit code? Five? Six? Eight?

Which passwords would be more secure (harder to crack)?

There are 32 symbols on the keyboard. What if your password was four digits with letters, numbers and symbols?

Passwords are case sensitive. That means upper and lower case letters are two different things. How does this affect your password security?

Relevancy:
Why are names of friends, family and pets poor choices for passwords?

What sorts of passwords could you make up that would be hard to crack but easy to remember?