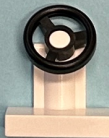
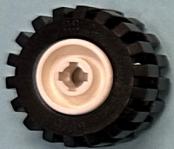
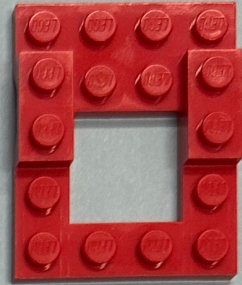
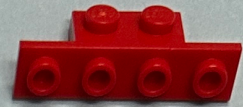
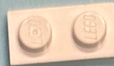


Setup Pattern



Already done



Record Results

Number of seconds to complete the **first** build:

$K =$	For example, if it took 1:40 for the first build, use 100 seconds for K
-------	---

You're going to build this truck again!

Take apart the fire truck (only!) and layout the bricks per the cover of this booklet. When ready, start your clock, open the booklet, build it again, record your time.

Number of seconds to complete the **second** build:

$Y_2 =$	For example, if it took 1:20 for the second build, use 80 seconds for Y_2
---------	---

Calculate the **learning rate** b as follows: $b = Y_2 \div K$

$b =$	In this example, $b = 80 \div 100$ which is 0.80, i.e, an 80% learning rate ...
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We just need to calculate an **exponent** n as follows: $n = \ln(b) \div \ln(2)$

$n =$	Our example gives an exponent value of $n = -0.322$ for our calculations...
-------	--

We can use this **power function** to determine the number of seconds it will take to build subsequent fire trucks:

$Y_x = Kx^n$, where x is the x^{th} fire truck built. How long will it take to build the third truck?

$Y_3 =$	In this example, the third truck should take about 70 seconds to build.
---------	---

How long will it take to build the tenth truck?

$Y_{10} =$	In this example, the tenth truck should take about 48 seconds to build.
------------	---

...and so forth.