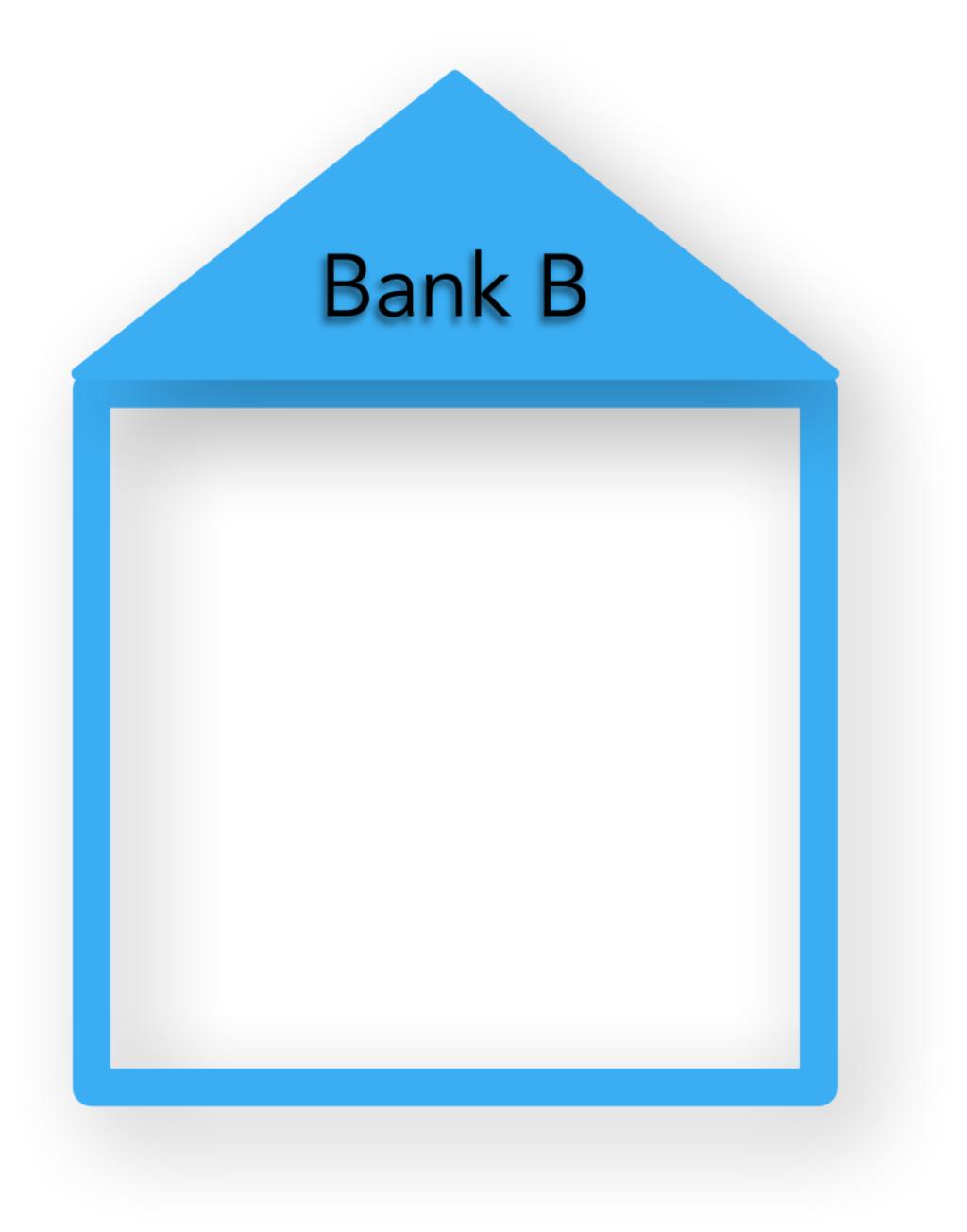


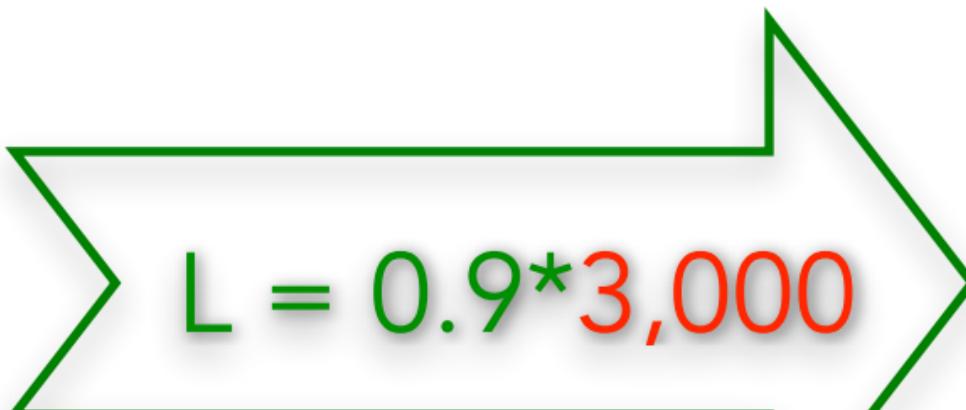


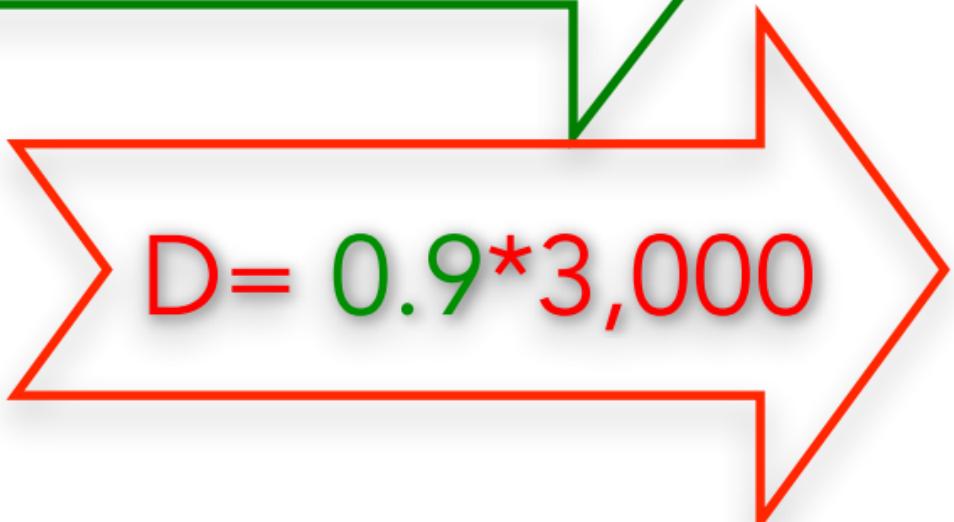
Bank A

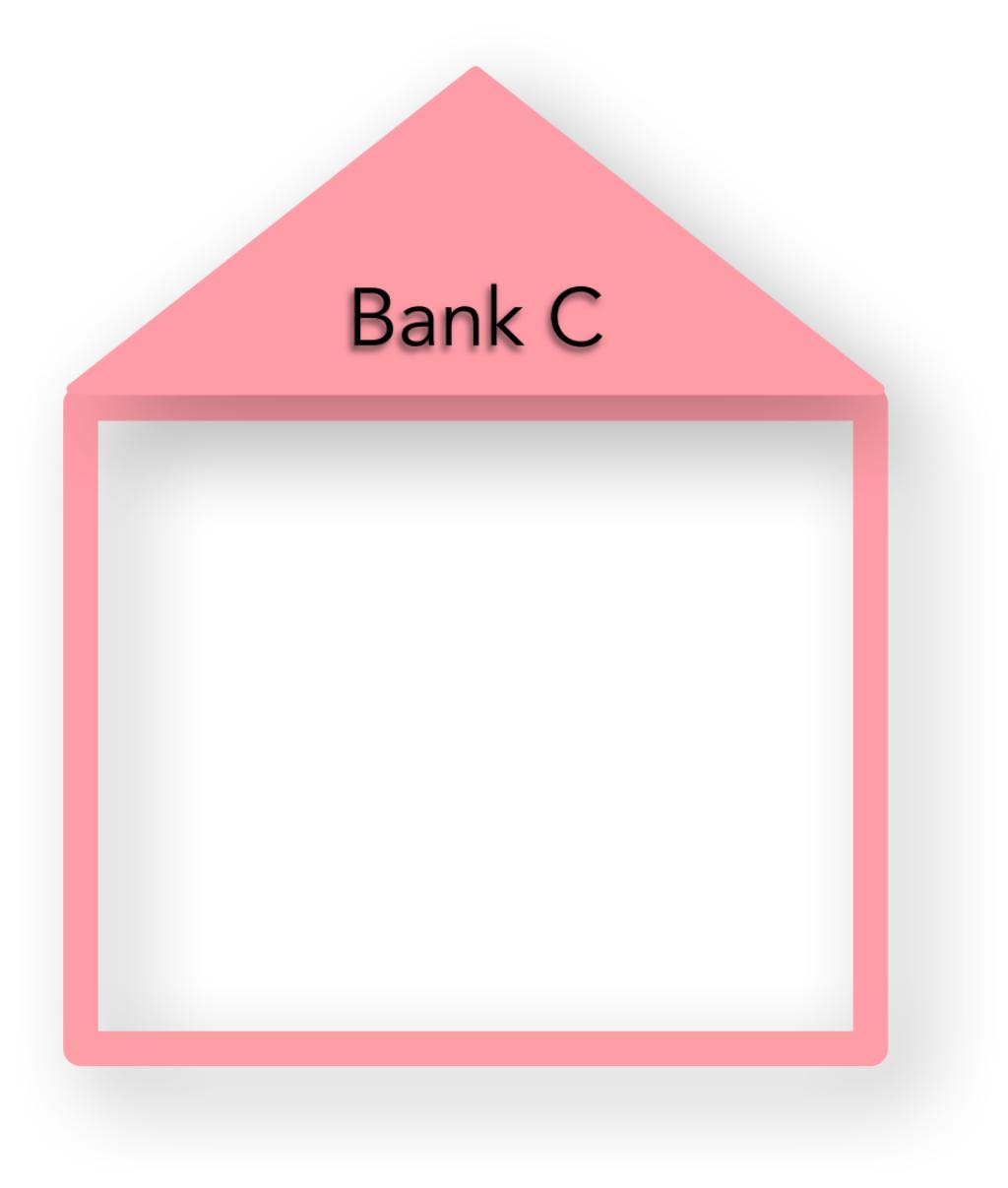
New
Money:
3,000b



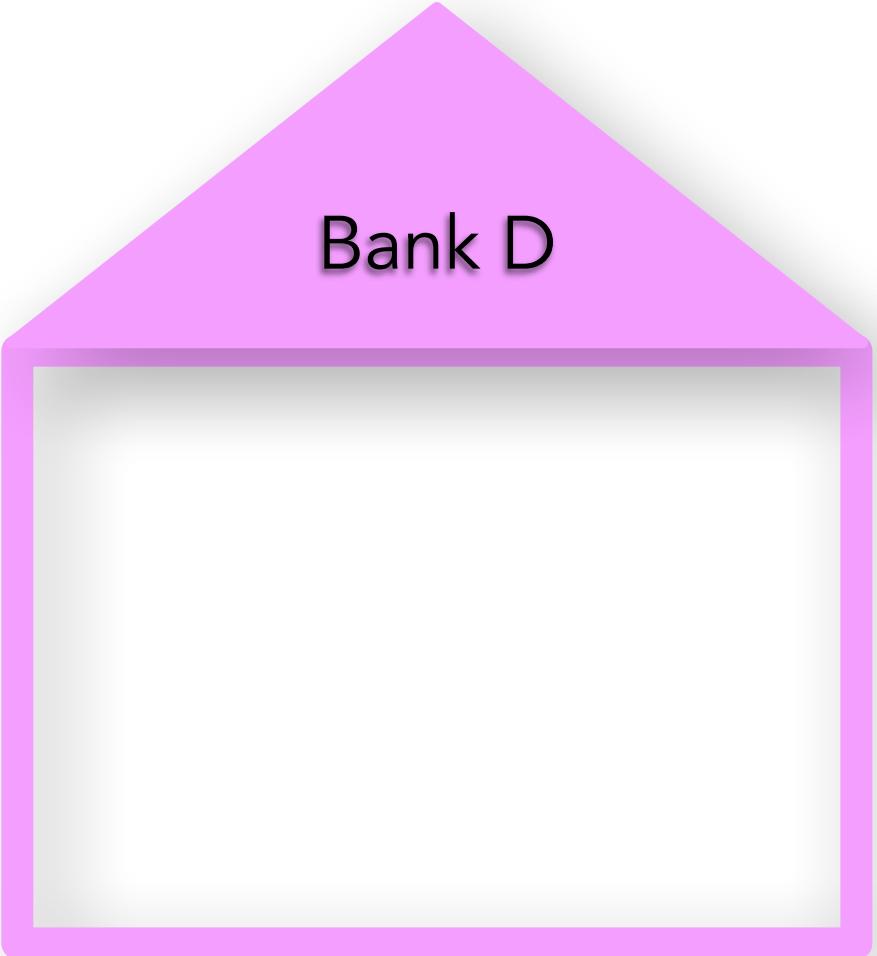
Bank B


$$L = 0.9 * 3,000$$

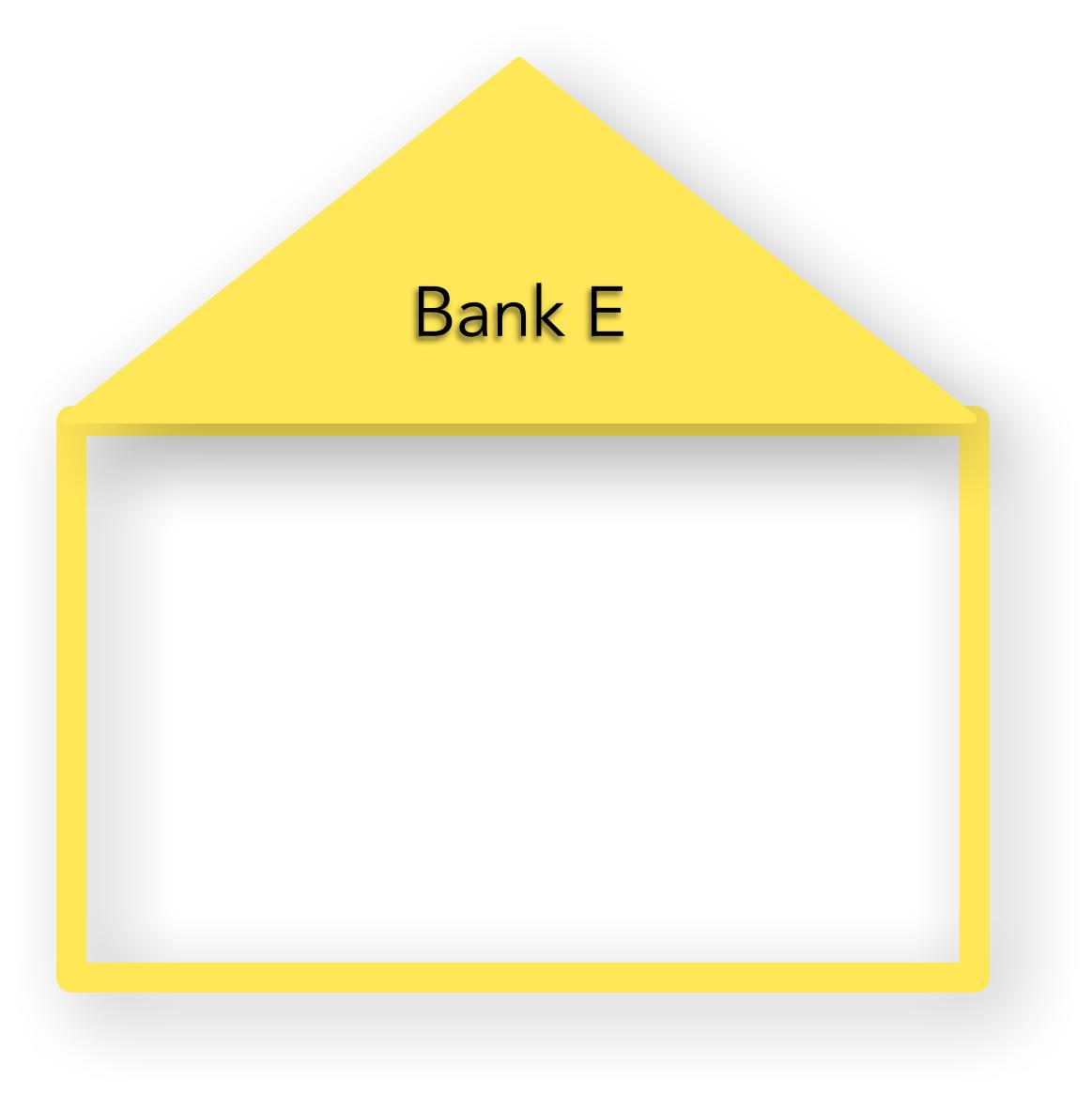

$$D = 0.9 * 3,000$$



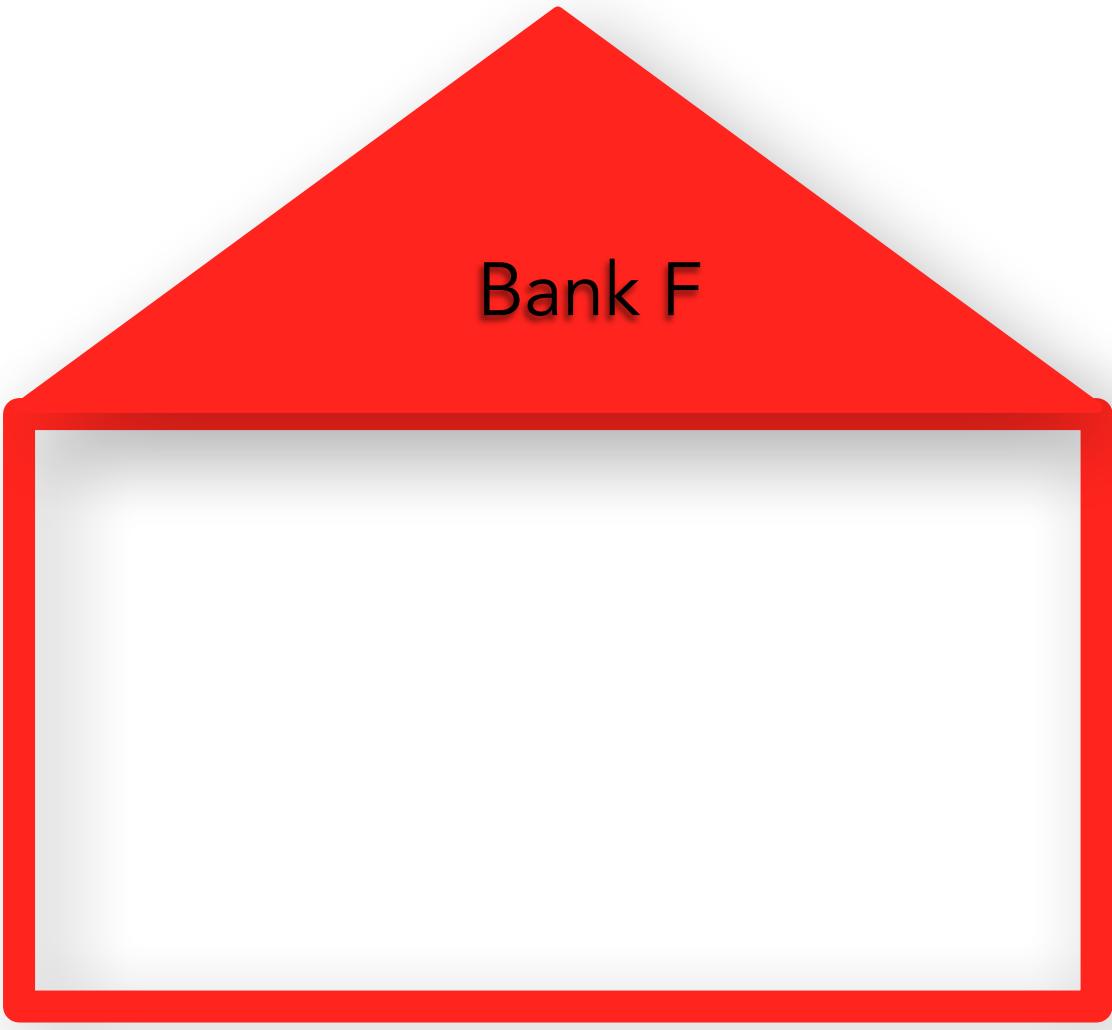
Bank C

A large, light gray rectangular area is centered within a pink envelope-shaped frame. The frame has a thick pink border and a triangular top flap. The text "Bank D" is positioned at the top center of the envelope.

Bank D



Bank E

A red envelope icon is shown, open at the top. The flap is white with a thin red border. The main body of the envelope is red. The text "Bank F" is centered in the upper portion of the red area.

Bank F

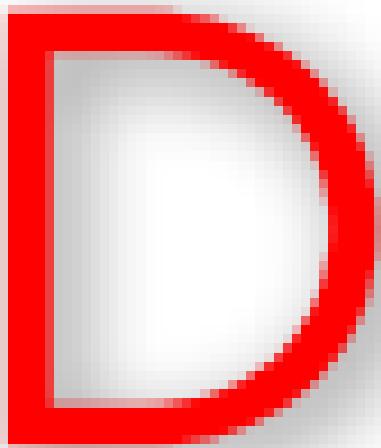
D

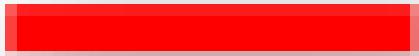
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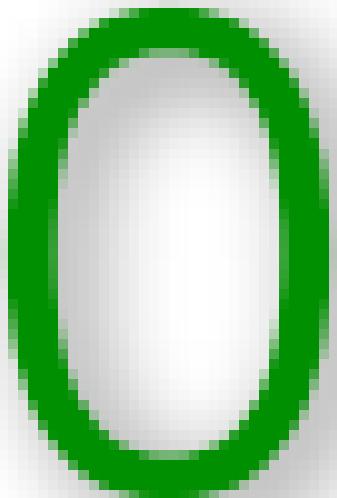
3,000

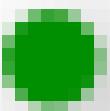
$$L = 0.9 * 0.9 * 3,000$$

$$D = 0.9 * 0.9 * 3,000$$

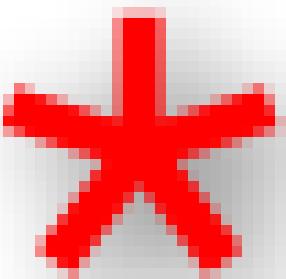




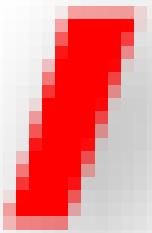


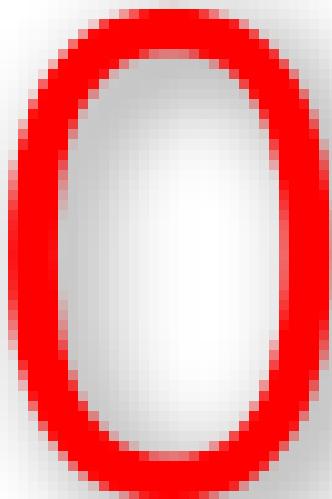


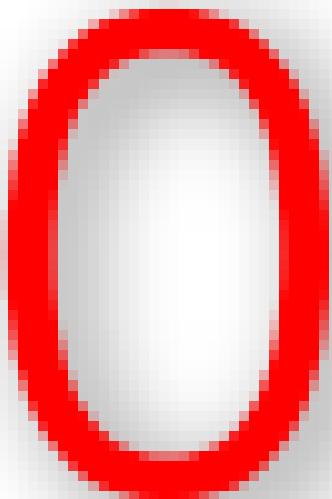
9

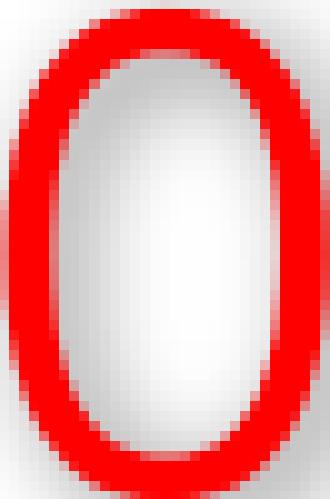


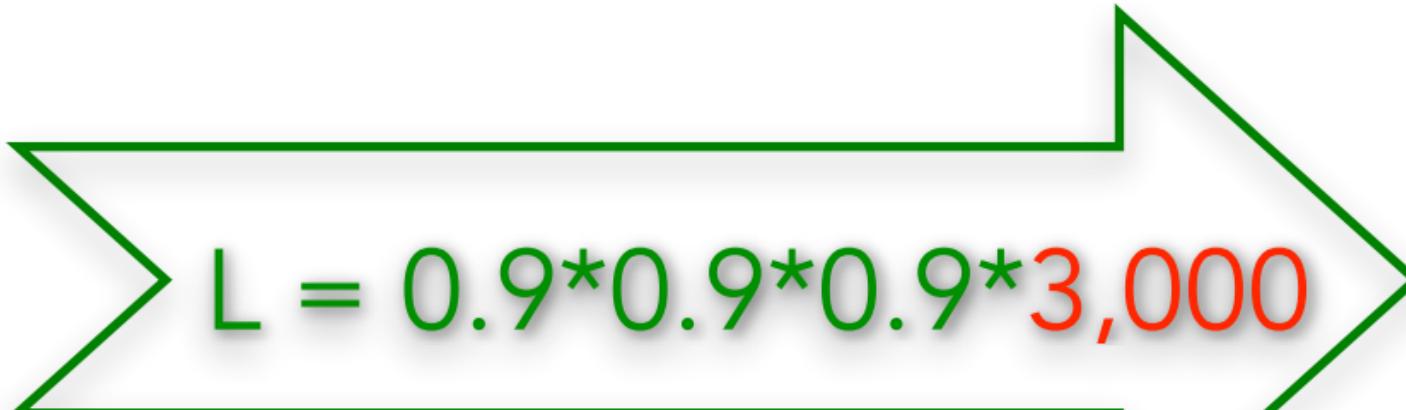
3



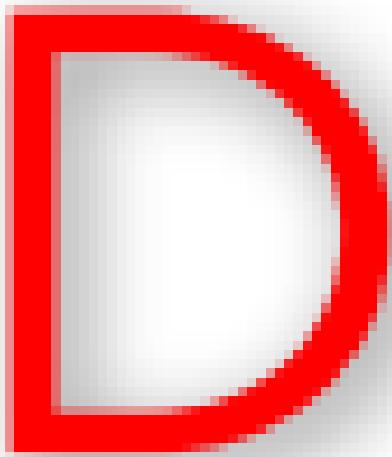




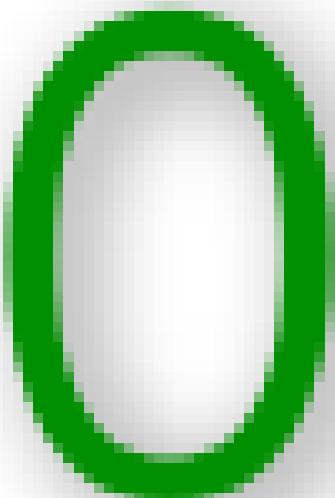


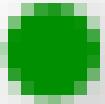

$$L = 0.9 * 0.9 * 0.9 * 3,000$$

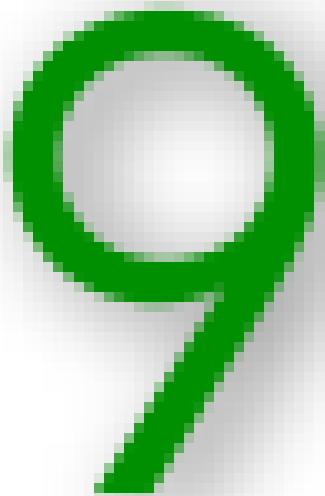

$$D = 0.9 * 0.9 * 0.9 * 3,000$$

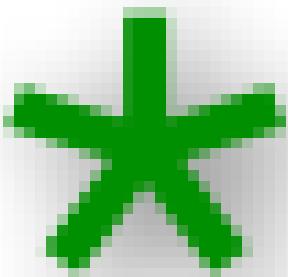


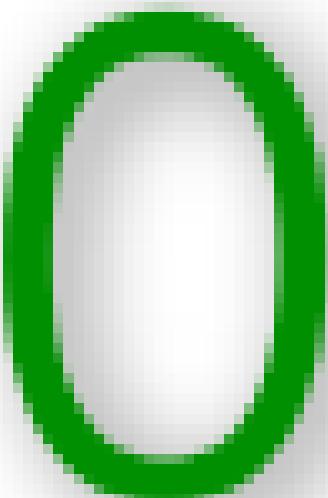


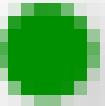


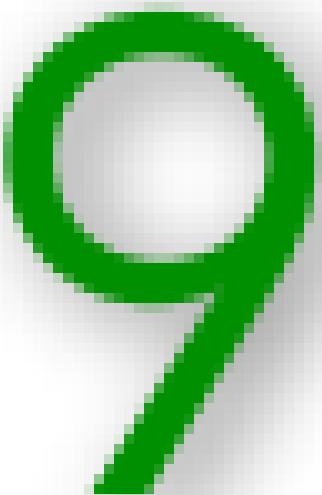


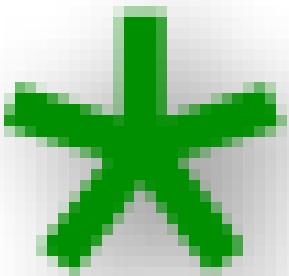




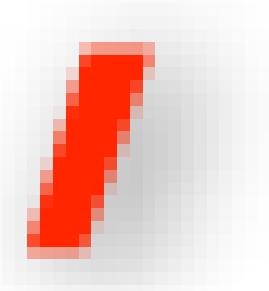


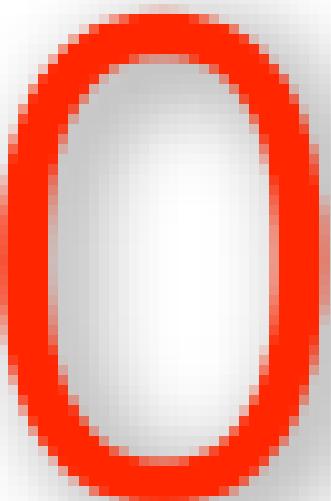


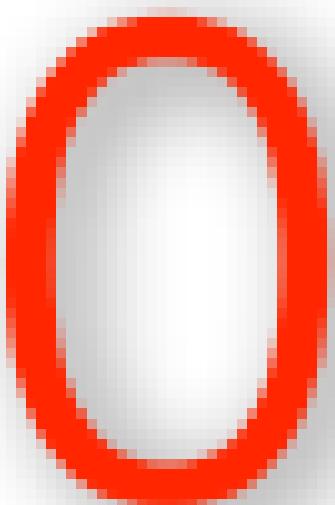


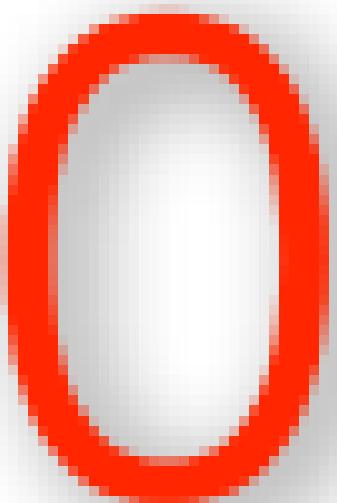


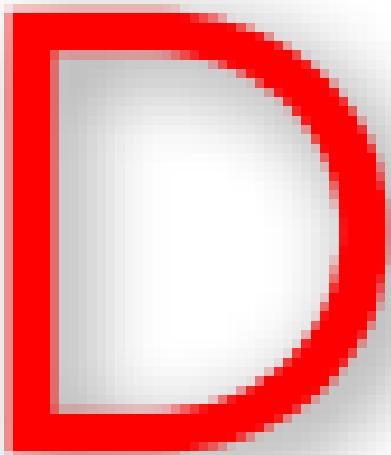
3



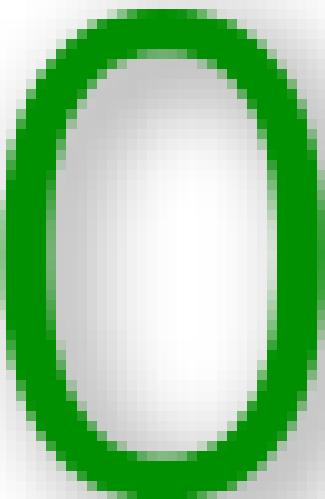


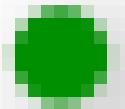


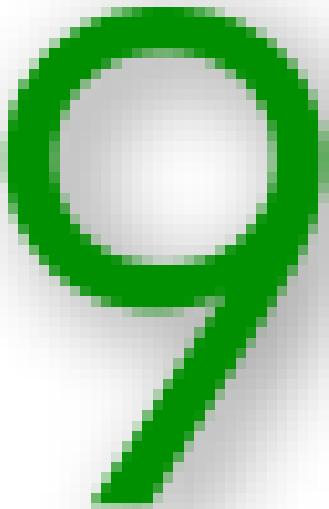




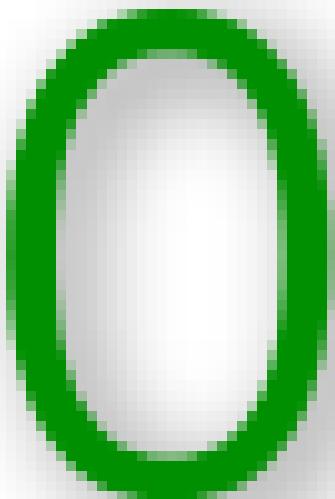


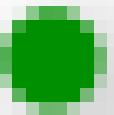


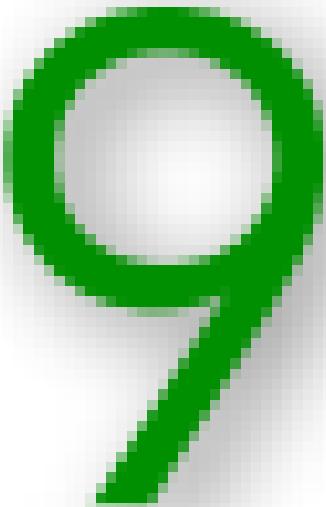


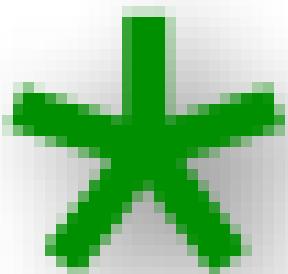


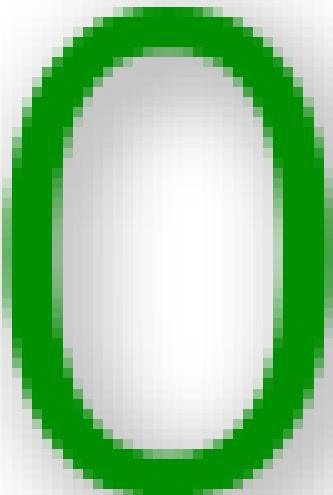


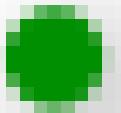


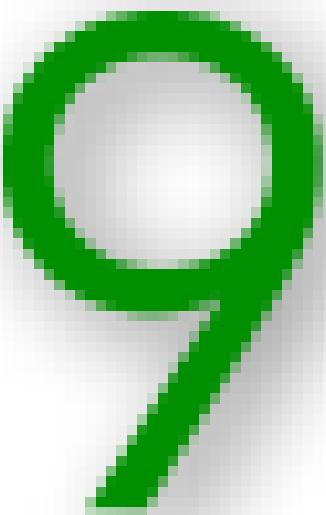


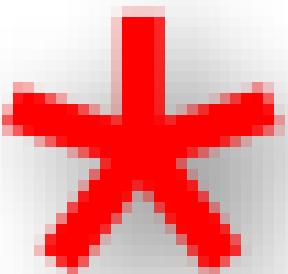




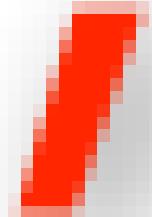


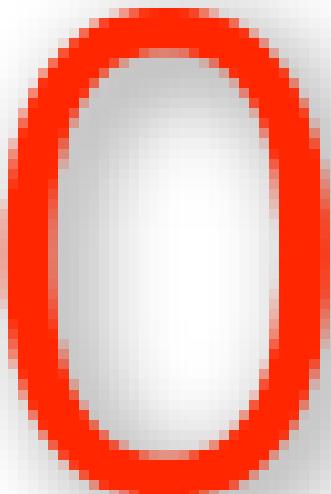


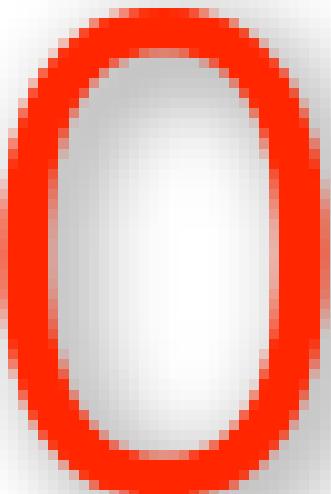


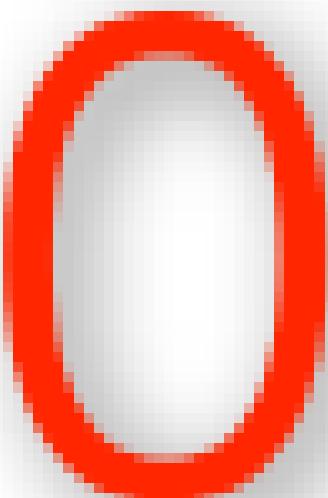


3









$$L = 0.9 * 0.9 * 0.9 * 0.9 * 0.9 * 3,000b$$

$$D = 0.9 * 0.9 * 0.9 * 0.9 * 0.9 * 3,000b$$

$$D = 0.9 * 0.9 * 0.9 * 0.9 * 3,000$$

$$L = 0.9 * 0.9 * 0.9 * 0.9 * 3,000b$$

$$D = 0.9 * 0.9 * 0.9 * 0.9 * 3,000b$$

$$D = 0.9 * 0.9 * 0.9 * 0.9 * 3,000$$

0

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1

x

3

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0

0

0

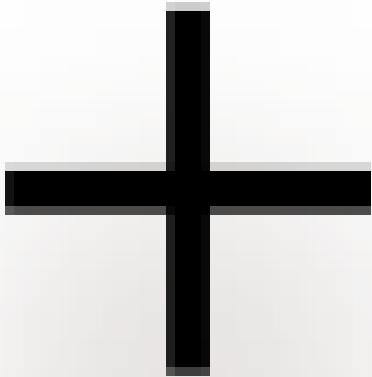
+ 0.1 * 0.9 * 3,000

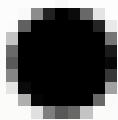
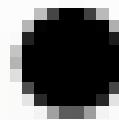
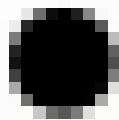
+ 0.1*0.9*0.9*3,000

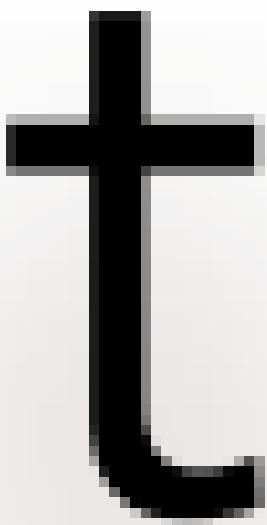
$$+ 0.1 * 0.9 * 0.9 * 0.9 * 0.9 * 3,000$$

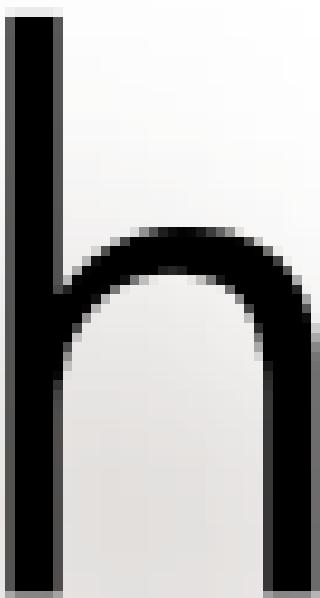
$$+ 0.1 * 0.9 * 0.9 * 0.9 * 0.9 * 3,000$$

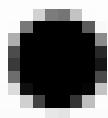
+ 0.1 * 0.9 * 0.9 * 0.9 * 0.9 * 0.9 * 3,000





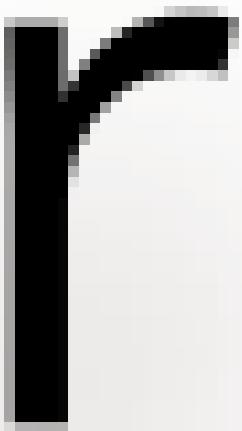






S

p







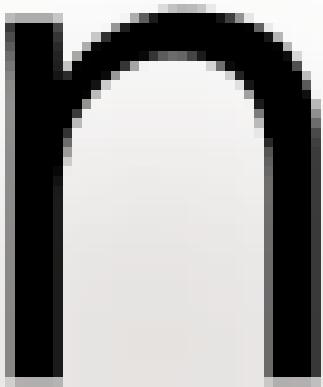


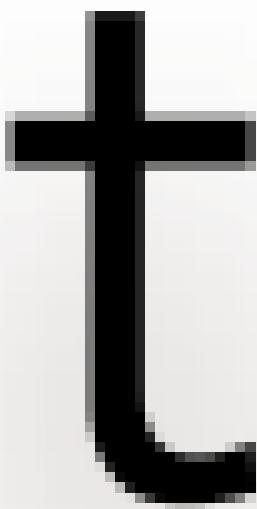
S

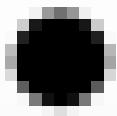
S

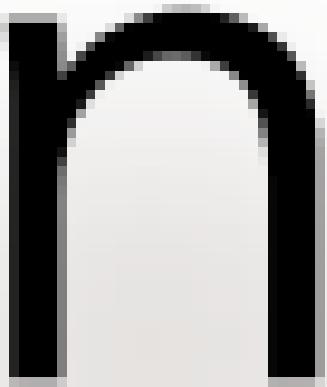


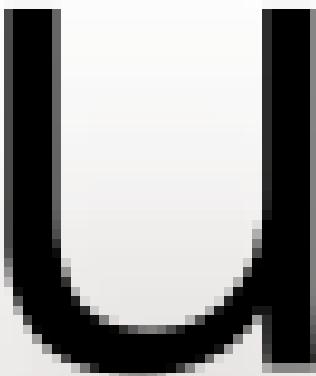










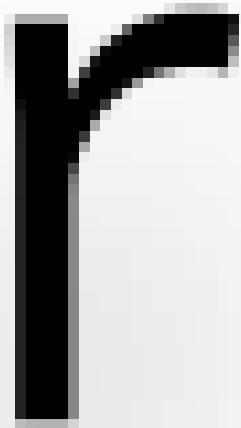




S

f



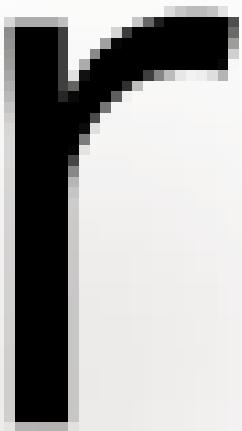


S



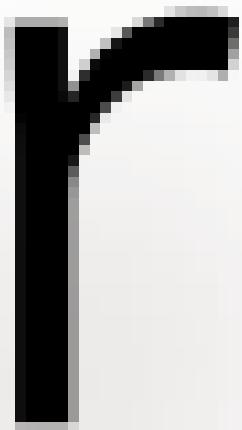






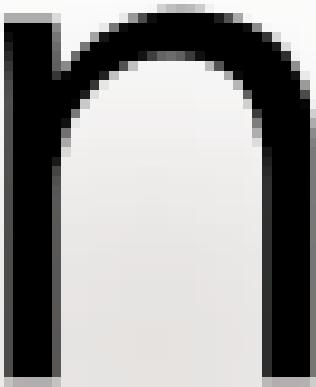
a







U



d

S

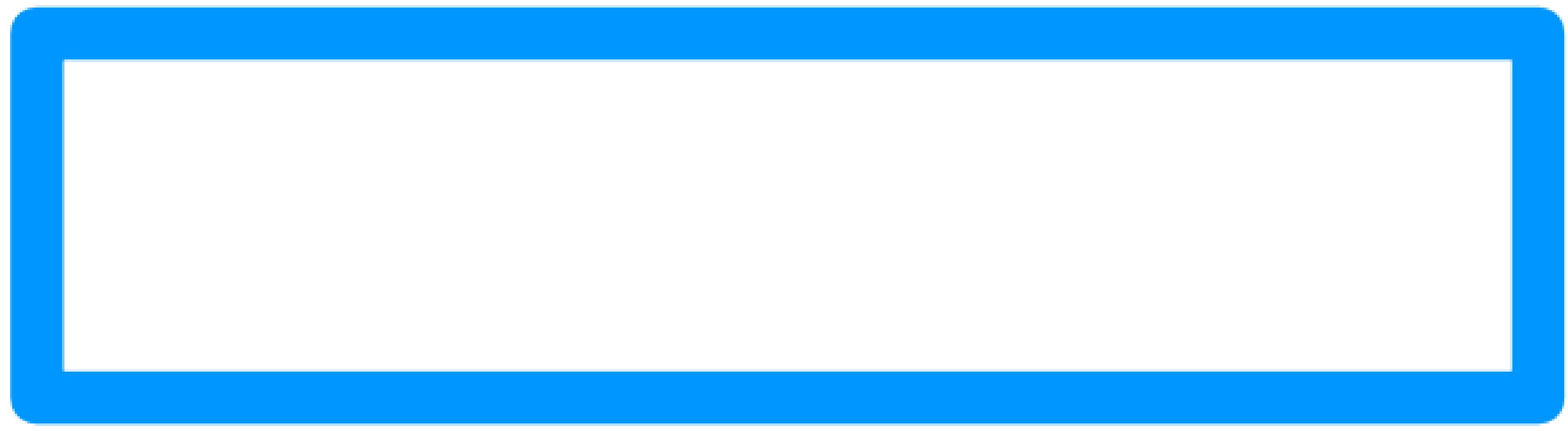
A

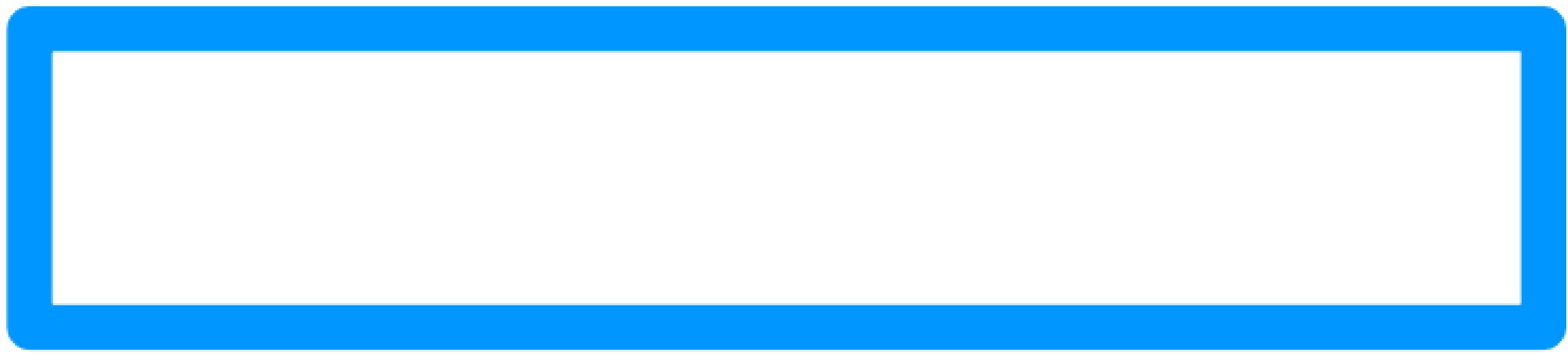
R

EE

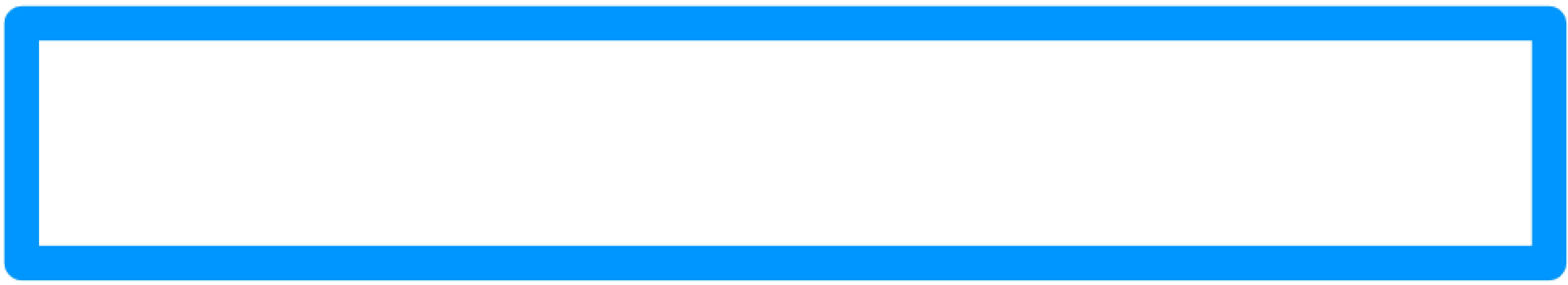
Total new
Reserves in all
banks













A

R

E
E

Factorout.1*3,000

0

.

1

*

3

1

0

0

0

1

1

+

0.9

+

$$0.9 * 0.9$$

+

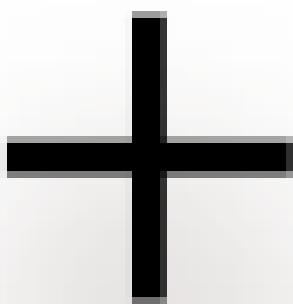
0.9 * 0.9 * 0.9

+

0.9 * 0.9 * 0.9 * 0.9

+

$0.9 * 0.9 * 0.9 * 0.9 * 0.9 * 0.9$



A

R

E

E

+

0 . 9

$+ 0.9^2$

+

...

...

...

0

.

9

n)

+ 0.9³

$+ 0.9^4$

+ 0.9⁵

+ 0.9⁶

AR
= 000.1 * 3,000.

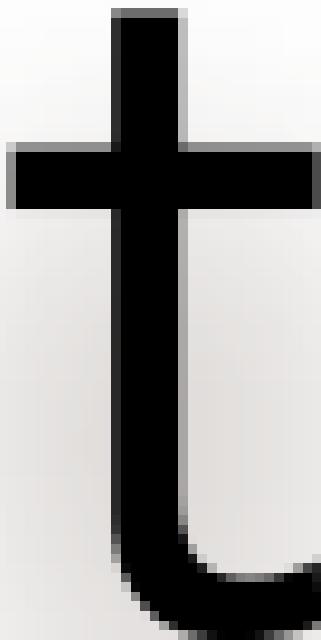
$$\frac{1}{1 - 0.9}$$

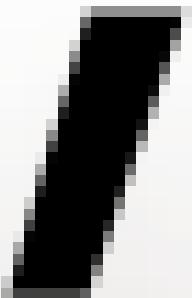
A 3,000b injection of new money into
the banking system, increase total

Reserves by 3,000b













æ

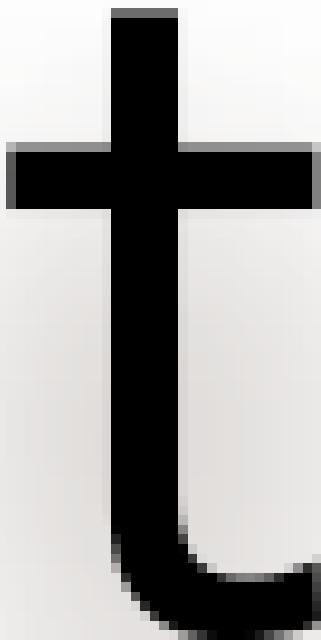


C

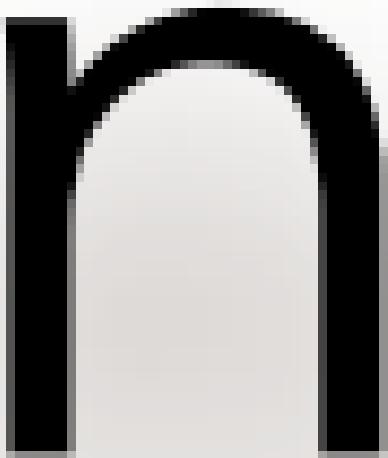
U









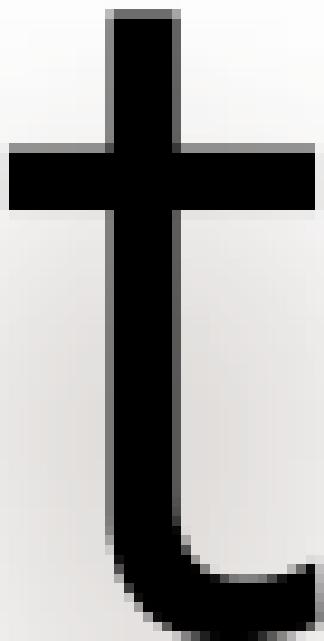




W

T





g

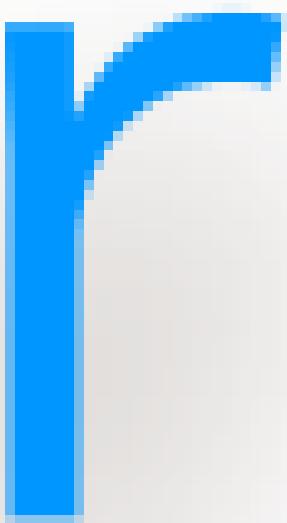


R













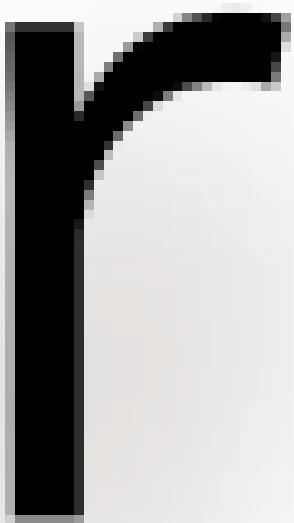






m

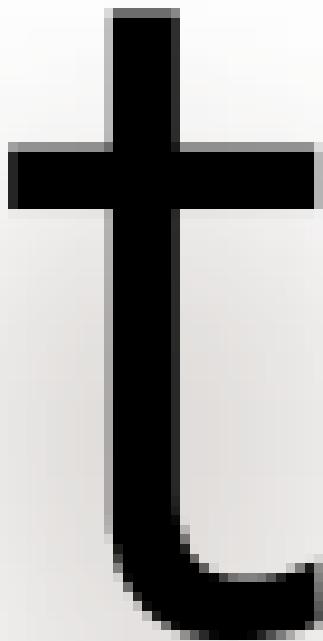


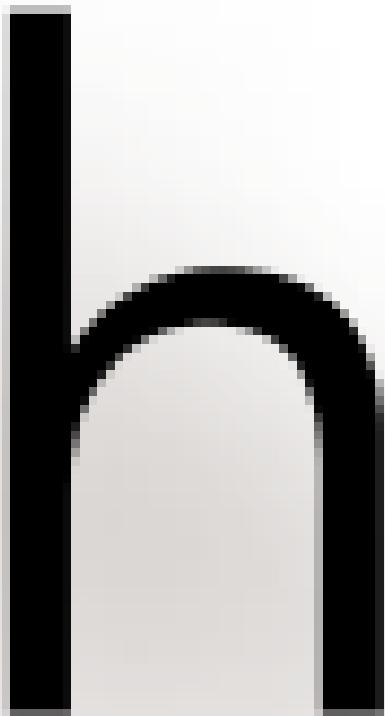


cl

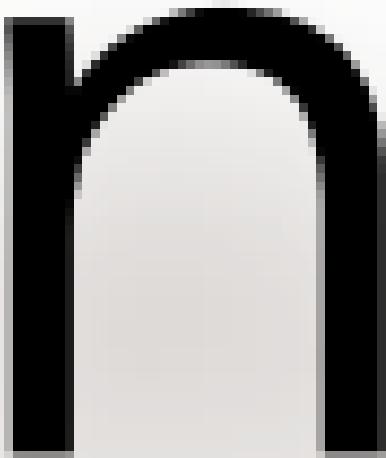
b

Y













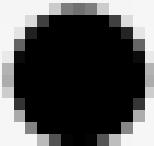
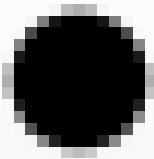




1



Y





R

Banks must keep
10% of Deposits in
Reserves

R

=

0.1

*

3

,000

R

=

O.

1

*

O.

3,

O.

$R_e = 0.1 \times$

$0.9 \times 3,000$

R = 0.1 * 10¹³ ⋅ 0.9 ⋅ 3,000

$R_o = 0.1^*$ 0.9^* $3,000.9^*$

1999年9月21日，中国科学院紫金山天文台发现一颗小行星，命名为“紫金星”。这是中国发现的第一颗小行星。

0.

1

*

3

0

0

1

AR = 3,000

$$\left(\frac{0.1}{1 - 0.9} \right)$$

AR = 3,000

$$\left(\begin{array}{c} 0.1 \\ - \\ 0.1 \end{array} \right)$$

ARE = **3,000**

1

Banks must keep
10% of Deposits in
Reserves

Banks must keep
10% of Deposits in
Reserves

Let's calculate now total Reserves generated by the new money: ΔR

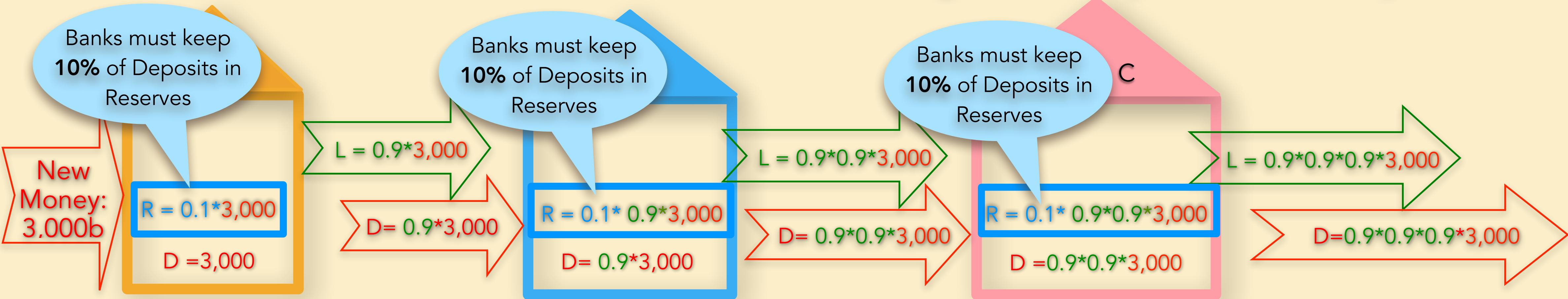
$$D = 0.9 \times 3,000$$

$$D = 0.9 * 0.9 * 3,000$$

$$D = 0.9 * 0.9 * 0.9 * 3,000$$

+...this process continues for several rounds

Let's calculate now Total Reserves generated by the new money: ΔR



Total new

Reserves in all banks $\Delta R = 0.1 * 3,000 + 0.1 * 0.9 * 3,000 + 0.1 * 0.9 * 0.9 * 3,000 + 0.1 * 0.9 * 0.9 * 0.9 * 3,000 + 0.1 * 0.9 * 0.9 * 0.9 * 0.9 * 3,000 + \dots$ this process continues for several rounds

Factor out $0.1 * 3,000$

$$\begin{aligned} \Delta R &= 0.1 * 3,000 (1 + 0.9 + 0.9 * 0.9 + 0.9 * 0.9 * 0.9 + 0.9 * 0.9 * 0.9 * 0.9 + \dots) \\ \Delta R &= 0.1 * 3,000 (1 + 0.9 + 0.9^2 + 0.9^3 + 0.9^4 + 0.9^5 + \dots 0.9^n) \end{aligned}$$

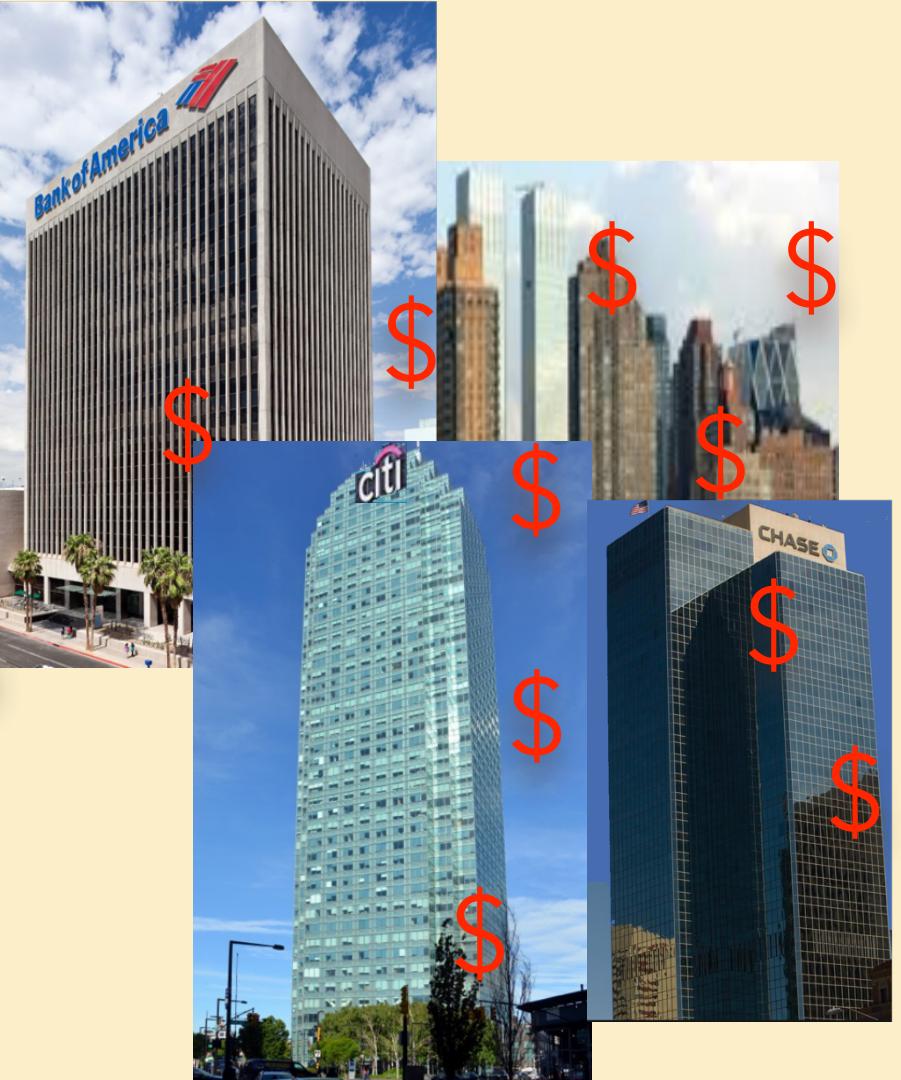
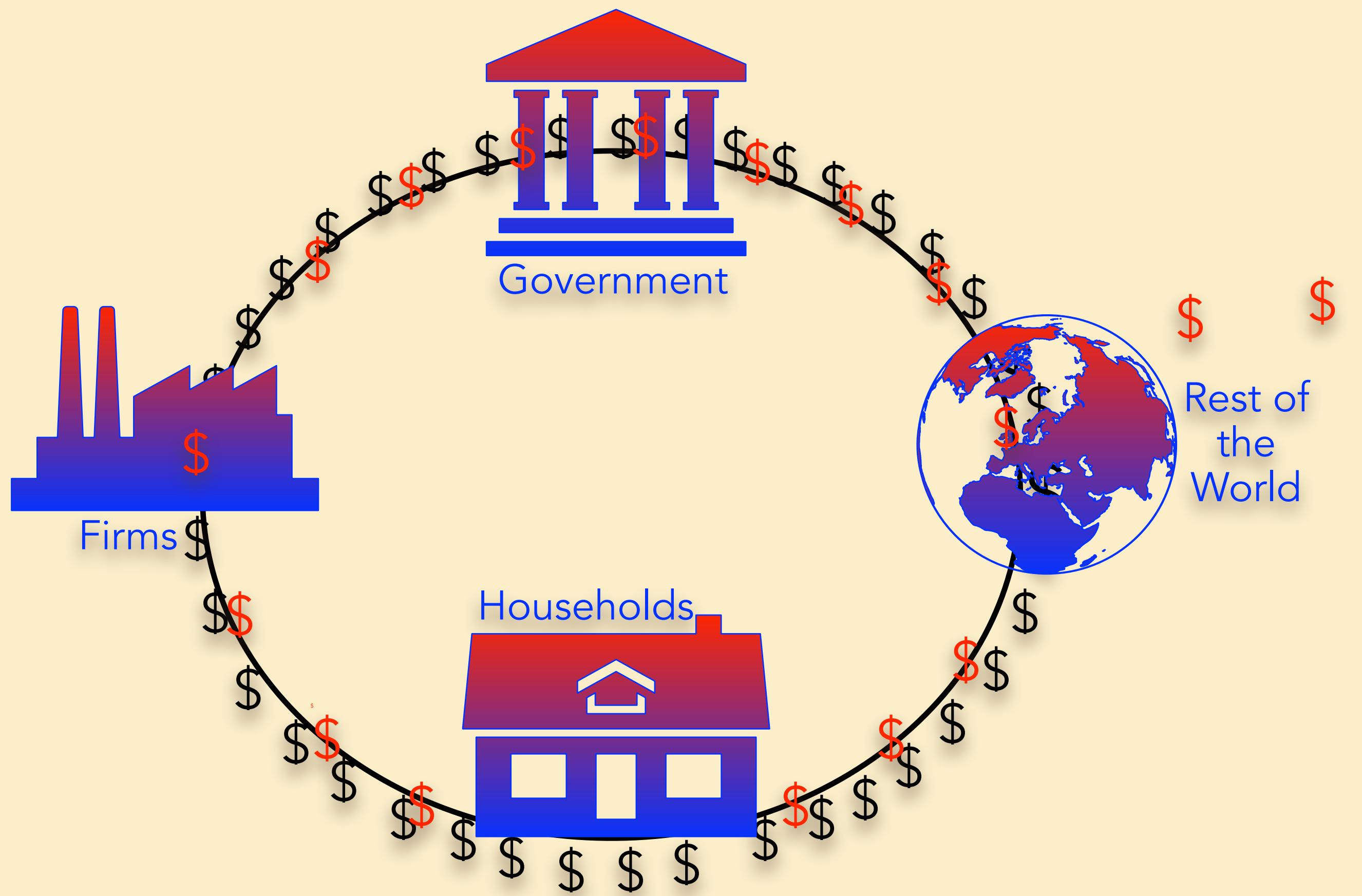
$$\Delta R = 0.1 * 3,000 \left(\frac{1}{1 - 0.9} \right)$$

$$\Delta R = 3,000 \left(\frac{0.1}{1 - 0.9} \right)$$

$$\Delta R = 3,000 \left(\frac{0.1}{0.1} \right)$$

$$\Delta R = 3,000 (1)$$

A **3,000b** injection of new money into the banking system, increase total Reserves by **3,000b**



The Federal Reserve
Bank creates new money

