

Unit 3 Test Review

The population of brown bears has been exploding. Suppose that, in the year 2020, there were 3,000 brown bears and that the population was predicted to continue to grow as shown in the table.

Year (y)	Bears (r)
0 (2020)	3,000
1	3,600
2	4,320
3	5,184
4	6,220.8
5	7,464.96
6	8,957.95

1. What is the **initial value**?
2. What is the **growth factor**?
3. Write an equation for the amount of bears **b** after years **y**.
4. What will the brown bear population be in 2027?
5. In what year will the brown bear population exceed 15,000?

2. Complete the table based on the exponential function.

$y = 3^x$	
0	
1	
2	
3	
4	
5	

$y = 3.7^x$	
0	
1	
2	
3	
4	
5	

Which function has a faster growth rate?

3. Complete the table based on the exponential function.

$y = 0.8^x$	
0	
1	
2	
3	
4	
5	

$y = 0.6^x$	
0	
1	
2	
3	
4	
5	

Which function has a faster decay rate?

Unit 3 Test Review

Frank brings 300 grams of chex mix to a party. Every time someone takes some chex mix, the amount remaining decreases by 9%.

1. Make a table showing the amount of **c chex mix** left after p people take their share.

Players	Grams
0	
1	
2	
3	
4	
5	

2. Write an equation for the amount of **c** chex mix left after p people have taken their share.

3. How much chex mix will be left after 40 people take their share?

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Kara has a plan for distributing prize money for the trivia contest. The contestant will receive \$7 for the first correct response. For the second correct response, the total winnings will increase to \$49. For the third correct response, the total winnings will increase to \$343, and so on.

1. Make a table showing a contestant's earnings m for answering questions c 1 through 6 correctly.

0	
1	
2	
3	
4	
5	
6	

2. Write an equation for the relationship between the number of correct responses c and the amount of money the contestant will receive m .

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$$r^{17} \cdot r^{45}$$

$$\frac{6^{15}}{6^{14}}$$

$$(x^5)^6$$

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$$7^5 \cdot 10^5$$

$$\frac{8^7}{8^7}$$

$$4^{11} \cdot 4^{31}$$

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$$(7^{11})^9$$

$$9^8 \cdot 3^8$$

$$\frac{23^{48}}{23^{35}}$$

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$$6^{17} \cdot 9^{17}$$

$$(5^4)^2$$

$$2^8 \cdot 2^5$$

$$4.31 \times 10^7$$

0.0000357

$$8.34 \times 10^{-6}$$

8,540,000,000