



Math Virtual Learning

Essential Math 4

May 5, 2020



Lesson: May 5, 2020

Objective/Learning Target:
I can use multiplication to understand exponents.



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You will explore the use of multiplication and its relationship to exponents.

Directions:

1. Click through the slides.
2. Watch all videos on slides.
3. Do what each slide asks on a separate sheet of paper.

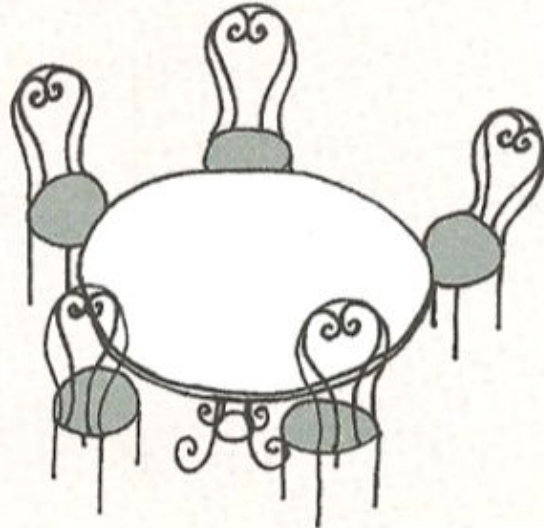
Essential Math 4

Bell Work
May 5, 2020

Ben, Maria, Ian, Cassie, and Jing are sitting around a round table.

- » Ben is next to Ian and Maria.
- » Cassie is next to Jing but not next to Maria.

Who else is next to Jing?



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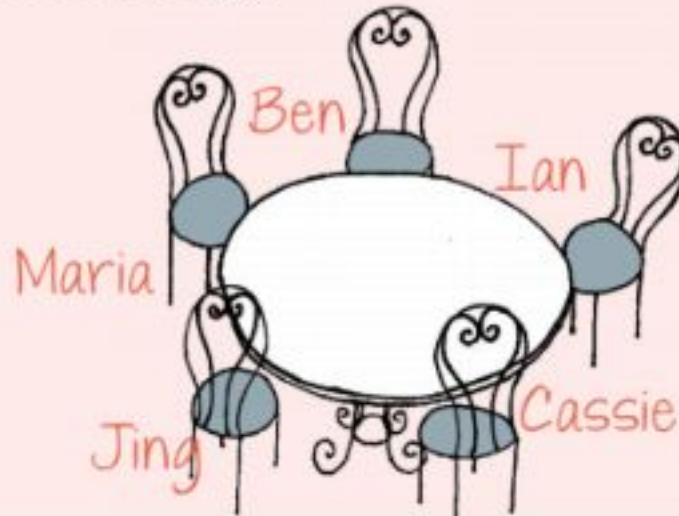
Bell Work **Key**
May 5, 2020

Ben, Maria, Ian, Cassie, and Jing are sitting around a round table.

- » Ben is next to Ian and Maria.
- » Cassie is next to Jing but not next to Maria.

Who else is next to Jing?

(The names may be rotated or the order may be reversed.)



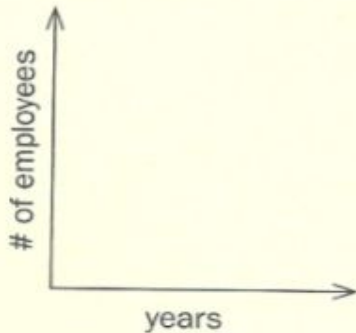
Jing can't be next to Ben, and since Cassie can't be next to Maria, Jing must be between them. So Jing is also next to Maria.

Practice Problems: Unit 11 Lesson 1 (page 4, #5)

⑤ Determine whether the story shows growth by addition or by multiplication. Sketch a graph for each story.

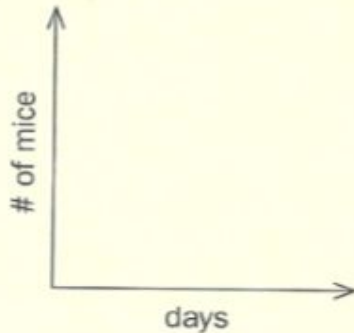
- Ⓐ A company hires 250 people per year in the first five years.

Is this growth by addition or multiplication?



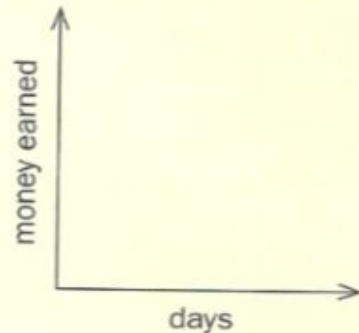
- Ⓑ The number of mice in the garage doubles every 20 days.

Is this growth by addition or multiplication?



- Ⓒ You get paid \$20 per day to feed the cat at your neighbor's house.

Is this growth by addition or multiplication?



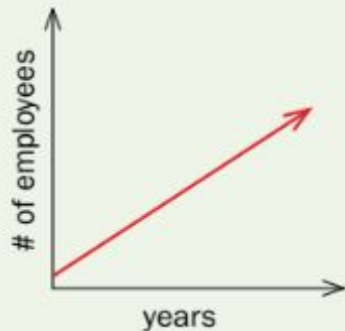
Answer Key: After completing the problems, check your answers for page 4 here.

⑤ Determine whether the story shows growth by addition or by multiplication. Sketch a graph for each story.

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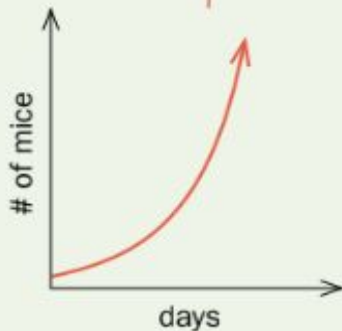
addition



② The number of mice in the garage doubles every 20 days.

Is this growth by addition or multiplication?

multiplication



③ You get paid \$20 per day to feed the cat at your neighbor's house.

Is this growth by addition or multiplication?

addition



Practice Problems: Unit 11 Lesson 1 (page 4, #6)

- 6 Figure out the pattern in each table and describe the growth. Is the pattern based on constant addition or constant multiplication? By how much?

(a)

x	y
1	9
2	18
3	27
4	36
5	45
6	54

(b)

x	y
1	2
2	4
3	8
4	16
5	32
6	64

(c)

x	y
1	6
2	12
3	24
4	48
5	96
6	192

(d)

x	y
1	4
2	20
3	36
4	52
5	68
6	84

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Answer Key: After completing the problems, check your answers for page 4 here.

⑥ Figure out the pattern in each table and describe the growth. Is the pattern based on constant addition or constant multiplication? By how much?

①

x	y
1	9
2	18
3	27
4	36
5	45
6	54

+ 9
+ 9
+ 9
+ 9
+ 9

addition of 9

②

x	y
1	2
2	4
3	8
4	16
5	32
6	64

• 2
• 2
• 2
• 2
• 2

multiplication by 2

③

x	y
1	6
2	12
3	24
4	48
5	96
6	192

• 2
• 2
• 2
• 2
• 2

multiplication by 2

④

x	y
1	4
2	20
3	36
4	52
5	68
6	84

+ 16
+ 16
+ 16
+ 16
+ 16

addition of 16



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Practice Problems: Unit 11 Lesson 1 (page 4, #7-8)

Discuss & Write What You Think

- ⑦ Why does it make sense that growth by addition results in a straight line graph?

- ⑧ Why does it make sense that growth by multiplication results in a curved graph?

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Answer Key: After completing the problems, check your answers for page 4 here.

Discuss & Write What You Think

- ⑦ Why does it make sense that growth by addition results in a straight line graph?

(Responses will vary.) Growth by addition is a way of describing a constant rate of change. Every unit change in x corresponds to some constant change in y . The constant growth results in the straight line graph.

- ⑧ Why does it make sense that growth by multiplication results in a curved graph?

(Responses will vary.) Growth by multiplication is curved because its growth depends on the quantity being multiplied. For example, doubling 100 results in a much larger change than doubling 10, so a graph showing a doubling pattern will grow much faster at 100 than at 10.

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Fun Stuff:

What can you say about the Beebo who isn't speaking? What can you say about the one who is?



Exactly one of us
is a Liar



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Fun Stuff **Key:**

②5 What can you say about the Beebo who isn't speaking? What can you say about the one who is?

If the speaker is a Truthteller, the other Beebo is a Liar.

If the speaker is a Liar, then the other Beebo must also be a Liar.



Exactly one of us is a Liar

Either way, the Beebo who is not speaking is a Liar. We don't know about the Beebo who is speaking.





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