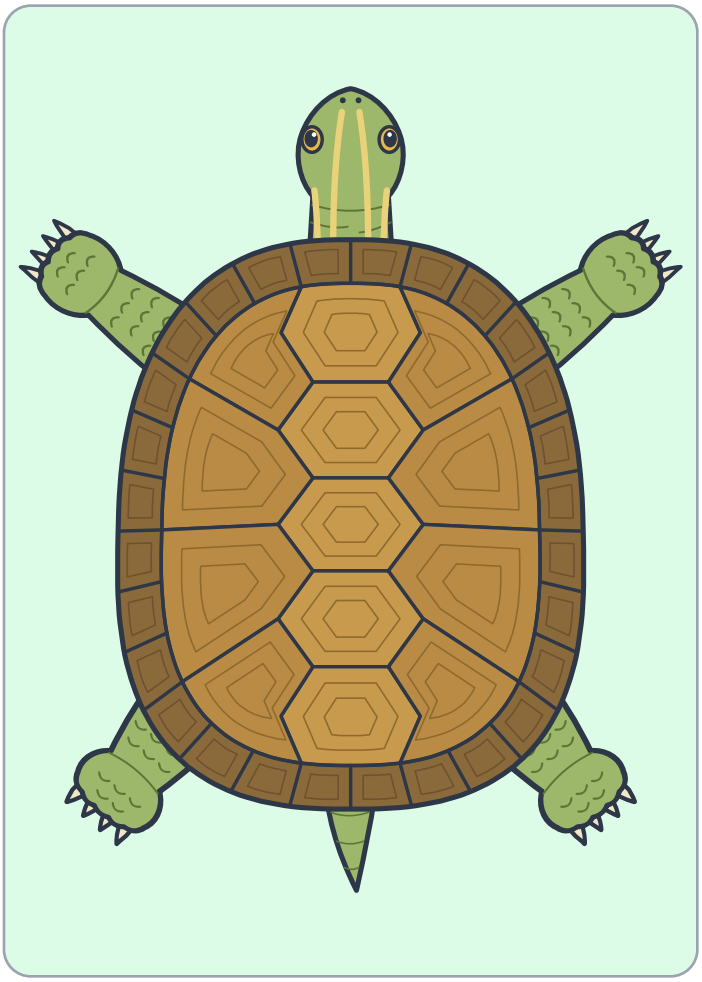
Name _____ Date _____

Calendars and Cycles

Count the plates on the turtle's back. Skip count by 28.

In many Anishinaabe and Haudenosaunee teachings, a turtle's shell holds a calendar: the large plates in the center stand for the moons of a year, and the small plates around the edge for the days of one moon.



1. How many large plates are in the center of the shell?

   _____ plates

2. How many small plates are around the edge?

   _____ plates

3. How many plates are on the shell in all?

   _____ plates

4. Each moon has 28 days. How many days are in 2 moons?

   _____ days

Skip count by 28: how many days in each number of moons?

Moons	1	2	3	4	5	6	7
Days	28		84			168	

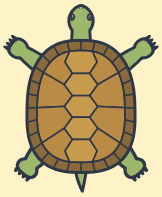
Moons	8	9	10	11	12	13
Days	224			308		

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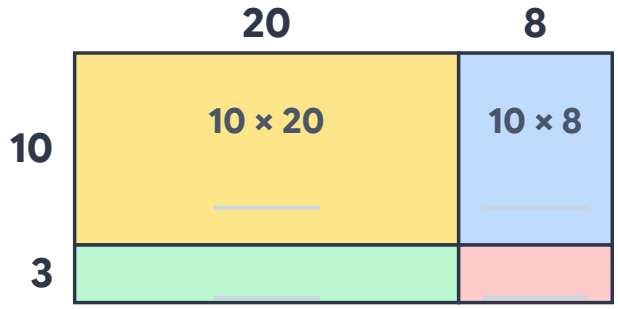
Name _____ Date _____

Calendars and Cycles

Find 13 × 28 with an area model. Then solve.



13 moons of 28 days: break 13 into 10 and 3, and 28 into 20 and 8. Find the four parts, then add them.



10 × 20 = _____
10 × 8 = _____
3 × 20 = _____
3 × 8 = _____

Add the parts: _____ + _____ + _____ + _____ = _____

1. Our calendar year has **365** days. A year of **13** moons of **28** days has **364** days. How many more days does our year have?

365 − 364 = 1

Example

1 day

2. How many days are in **6** moons of **28** days?

_____ days

3. How many moons of **28** days are in **196** days?

_____ moons

4. Day **100** of a year of 28-day moons: which moon is it in, and which day of that moon?

moon _____ day _____

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Name _____ Date _____



Calendars and Cycles

List the multiples. When do the marked teeth meet again?

Two gears turn together, and the teeth with dots start side by side. A gear with 4 teeth has its dot back at the start after every 4 teeth go by. The two dots meet again after the least common multiple of the numbers of teeth.

1. 

4 and 6 teeth

Example

4: 4 8 **(12)** 16 20

6: 6 **(12)** 18 24 30

after 12 teeth

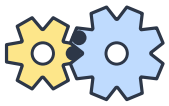
2. 

3 and 5 teeth

3: 3 ___ ___ ___ ___

5: 5 ___ ___ ___ ___

after ___ teeth

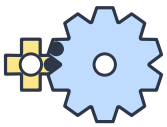
3. 

6 and 8 teeth

6: 6 ___ ___ ___ ___

8: 8 ___ ___ ___ ___

after ___ teeth

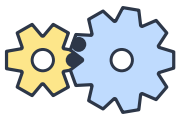
4. 

4 and 10 teeth

4: 4 ___ ___ ___ ___

10: 10 ___ ___ ___ ___

after ___ teeth

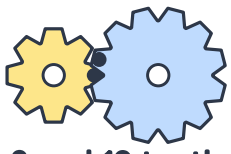
5. 

6 and 9 teeth

6: 6 ___ ___ ___ ___

9: 9 ___ ___ ___ ___

after ___ teeth

6. 

8 and 12 teeth

8: 8 ___ ___ ___ ___

12: 12 ___ ___ ___ ___

after ___ teeth

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Name _____ Date _____



Calendars and Cycles

Mark each cycle on the days. Then solve.

1. Circle every 4th day. Draw a box around every 6th day. Example

1	2	3	(4)	5	[6]	7	(8)	9	10	11	[(12)]	13	14	15	(16)	17	[18]	19	(20)	21	22	23	[(24)]

Both happen first on day **12**

2. Circle every 3rd day. Draw a box around every 5th day.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

Both happen first on day _____

3. Circle every 6th day. Draw a box around every 10th day.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

Both happen first on day _____

4. A class waters plants every **3** days and feeds the fish every **4** days. They did both today. In how many days will they do both again?

_____ days

5. One bus leaves every **10** minutes, another every **15**. Both leave at 8:00. How many minutes later do both leave again?

_____ minutes

6. The Maya 260-day count joins **13** numbers to **20** day names, each moving on one a day. After how many days do a number and a name meet again?

_____ days

7. A moon of **28** days starts on a Monday. A week has **7** days. After how many days does a moon start on a Monday again?

_____ days

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Name _____ Date _____



Calendars and Cycles

The Maya Calendar Round: when do two calendars meet?

The Maya 260-day count, the Tzolk'in, joins each of **13** numbers to each of **20** day names. The 365-day count, the Haab', has **18** months of **20** days and **5** more days. Maya day keepers in Guatemala still keep the 260-day count.

Haab' years	1	2	4	10	52
Days	365				

Tzolk'in counts	1	2	10	73
Days	260			

1. The Tzolk'in joins **13** numbers to **20** day names. How many days is it?

$$13 \times 20 = 260$$

Example **260** days

2. The Haab' is **18** months of **20** days, then **5** days. How many days is it?

_____ days

3. **260** = **5** × **52** and **365** = **5** × **73**. What factor greater than **1** do **260** and **365** share?

_____

4. The least common multiple of **260** and **365** is **5** × **52** × **73**. What is it?

_____ days

5. The Calendar Round is 18,980 days. How many 365-day years is that?

_____ years

6. How many 260-day counts are in the 18,980-day Calendar Round?

_____ counts

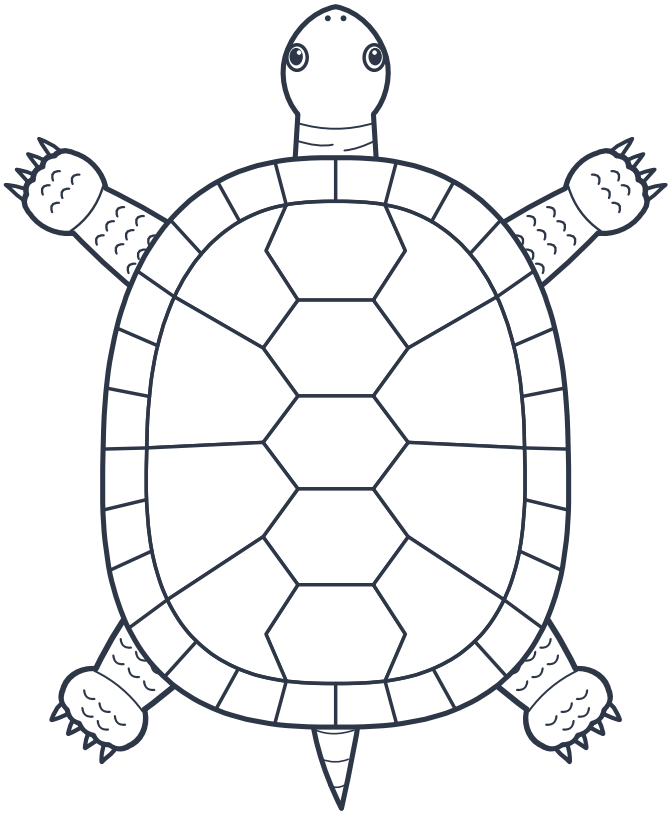
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Name _____ Date _____

Calendars and Cycles

Count the plates on the turtle's back. Skip count by 28.

In many Anishinaabe and Haudenosaunee teachings, a turtle's shell holds a calendar: the large plates in the center stand for the moons of a year, and the small plates around the edge for the days of one moon.



1. How many large plates are in the center of the shell?

   _____ plates

2. How many small plates are around the edge?

   _____ plates

3. How many plates are on the shell in all?

   _____ plates

4. Each moon has **28** days. How many days are in **2** moons?

   _____ days

Skip count by 28: how many days in each number of moons?

Moons	1	2	3	4	5	6	7
Days	28		84			168	

Moons	8	9	10	11	12	13
Days	224			308		

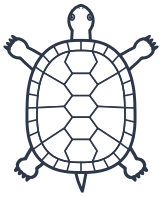
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Name _____ Date _____



Calendars and Cycles

Find 13 × 28 with an area model. Then solve.



13 moons of 28 days: break 13 into 10 and 3, and 28 into 20 and 8. Find the four parts, then add them.

	20	8
10	10 × 20 = ____	10 × 8 = ____
3	3 × 20 = ____	3 × 8 = ____

Add the parts: ____ + ____ + ____ + ____ = ____

1. Our calendar year has **365** days. A year of **13** moons of **28** days has **364** days. How many more days does our year have?

365 − 364 = 1

Example

1 day

2. How many days are in **6** moons of **28** days?

____ days

3. How many moons of **28** days are in **196** days?

____ moons

4. Day **100** of a year of 28-day moons: which moon is it in, and which day of that moon?

moon ____ day ____

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Name _____ Date _____

Calendars and Cycles

List the multiples. When do the marked teeth meet again?

Two gears turn together, and the teeth with dots start side by side. A gear with 4 teeth has its dot back at the start after every 4 teeth go by. The two dots meet again after the least common multiple of the numbers of teeth.

1. 

4 and 6 teeth

4: 4 8 (12) 16 20

6: 6 (12) 18 24 30

Example

after 12 teeth

2. 

3 and 5 teeth

3: 3 ___ ___ ___ ___

5: 5 ___ ___ ___ ___

after ___ teeth

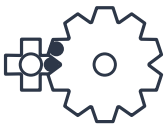
3. 

6 and 8 teeth

6: 6 ___ ___ ___ ___

8: 8 ___ ___ ___ ___

after ___ teeth

4. 

4 and 10 teeth

4: 4 ___ ___ ___ ___

10: 10 ___ ___ ___ ___

after ___ teeth

5. 

6 and 9 teeth

6: 6 ___ ___ ___ ___

9: 9 ___ ___ ___ ___

after ___ teeth

6. 

8 and 12 teeth

8: 8 ___ ___ ___ ___

12: 12 ___ ___ ___ ___

after ___ teeth

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Name _____ Date _____



Calendars and Cycles

Mark each cycle on the days. Then solve.

1. Circle every 4th day. Draw a box around every 6th day. Example

1	2	3	(4)	5	[6]	7	(8)	9	10	11	[(12)]	13	14	15	(16)	17	[18]	19	(20)	21	22	23	[(24)]

Both happen first on day **12**

2. Circle every 3rd day. Draw a box around every 5th day.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

Both happen first on day _____

3. Circle every 6th day. Draw a box around every 10th day.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

Both happen first on day _____

4. A class waters plants every **3** days and feeds the fish every **4** days. They did both today. In how many days will they do both again?

_____ days

5. One bus leaves every **10** minutes, another every **15**. Both leave at 8:00. How many minutes later do both leave again?

_____ minutes

6. The Maya 260-day count joins **13** numbers to **20** day names, each moving on one a day. After how many days do a number and a name meet again?

_____ days

7. A moon of **28** days starts on a Monday. A week has **7** days. After how many days does a moon start on a Monday again?

_____ days

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Name _____ Date _____



Calendars and Cycles

The Maya Calendar Round: when do two calendars meet?

The Maya 260-day count, the Tzolk'in, joins each of 13 numbers to each of 20 day names. The 365-day count, the Haab', has 18 months of 20 days and 5 more days. Maya day keepers in Guatemala still keep the 260-day count.

Haab' years	1	2	4	10	52
Days	365				

Tzolk'in counts	1	2	10	73
Days	260			

1. The Tzolk'in joins **13** numbers to **20** day names. How many days is it?

$$13 \times 20 = 260$$

Example **260** days

2. The Haab' is **18** months of **20** days, then **5** days. How many days is it?

_____ days

3. **260** = **5** × **52** and **365** = **5** × **73**. What factor greater than **1** do **260** and **365** share?

_____

4. The least common multiple of **260** and **365** is **5** × **52** × **73**. What is it?

_____ days

5. The Calendar Round is 18,980 days. How many 365-day years is that?

_____ years

6. How many 260-day counts are in the 18,980-day Calendar Round?

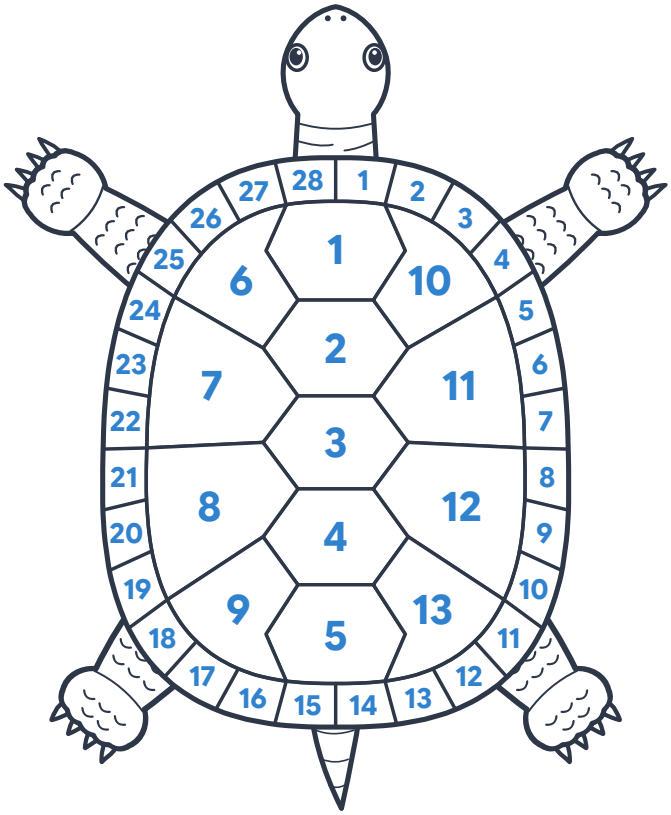
_____ counts

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Calendars and Cycles

Count the plates on the turtle's back. Skip count by 28.

In many Anishinaabe and Haudenosaunee teachings, a turtle's shell holds a calendar: the large plates in the center stand for the moons of a year, and the small plates around the edge for the days of one moon.



1. How many large plates are in the center of the shell?

   13 plates

2. How many small plates are around the edge?

   28 plates

3. How many plates are on the shell in all?

   41 plates

4. Each moon has 28 days. How many days are in 2 moons?

   56 days

Skip count by 28: how many days in each number of moons?

Moons	1	2	3	4	5	6	7
Days	28	56	84	112	140	168	196

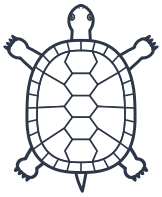
Moons	8	9	10	11	12	13
Days	224	252	280	308	336	364

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Calendars and Cycles

Find 13 × 28 with an area model. Then solve.



13 moons of 28 days: break 13 into 10 and 3, and 28 into 20 and 8. Find the four parts, then add them.

	20	8
10	10 × 20 200	10 × 8 80
3	60	24

10 × 20 = 200
10 × 8 = 80
3 × 20 = 60
3 × 8 = 24

Add the parts: 200 + 80 + 60 + 24 = 364

1. Our calendar year has **365** days. A year of **13** moons of **28** days has **364** days. How many more days does our year have?

365 − 364 = 1

Example

1 day

2. How many days are in **6** moons of **28** days?

6 × 28 = 168

168 days

3. How many moons of **28** days are in **196** days?

196 ÷ 28 = 7

7 moons

4. Day **100** of a year of 28-day moons: which moon is it in, and which day of that moon?

100 = 3 × 28 + 16

moon 4 day 16

Find worksheets, teacher tools, and more at animalmath.com
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Calendars and Cycles

List the multiples. When do the marked teeth meet again?

Two gears turn together, and the teeth with dots start side by side. A gear with 4 teeth has its dot back at the start after every 4 teeth go by. The two dots meet again after the least common multiple of the numbers of teeth.

1. Example



4 and 6 teeth

4: 4, 8, **12**, 16, 20
6: 6, **12**, 18, 24, 30

after 12 teeth

2.



3 and 5 teeth

3: 3, 6, 9, 12, **15**
5: 5, 10, **15**, 20, 25

after 15 teeth

3.

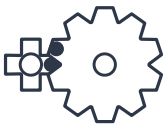


6 and 8 teeth

6: 6, 12, 18, **24**, 30
8: 8, 16, **24**, 32, 40

after 24 teeth

4.



4 and 10 teeth

4: 4, 8, 12, 16, **20**
10: 10, **20**, 30, 40, 50

after 20 teeth

5.

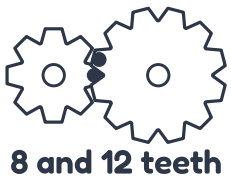


6 and 9 teeth

6: 6, 12, **18**, 24, 30
9: 9, **18**, 27, 36, 45

after 18 teeth

6.



8 and 12 teeth

8: 8, 16, **24**, 32, 40
12: 12, **24**, 36, 48, 60

after 24 teeth

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Calendars and Cycles

Mark each cycle on the days. Then solve.

1. Circle every 4th day. Draw a box around every 6th day. Example

1	2	3	(4)	5	[6]	7	(8)	9	10	11	[(12)]	13	14	15	(16)	17	[18]	19	(20)	21	22	23	[(24)]

Both happen first on day **12**

2. Circle every 3rd day. Draw a box around every 5th day.

1	2	(3)	4	[5]	(6)	7	8	(9)	[10]	11	(12)	13	14	[(15)]	16	17	(18)	19	[20]	(21)	22	23	(24)	[25]	26	(27)	28	29	[(30)]

Both happen first on day **15**

3. Circle every 6th day. Draw a box around every 10th day.

1	2	3	4	5	(6)	7	8	9	[10]	11	(12)	13	14	15	16	17	(18)	19	[20]	21	22	23	(24)	25	26	27	28	29	[(30)]

Both happen first on day **30**

4. A class waters plants every **3** days and feeds the fish every **4** days. They did both today. In how many days will they do both again?

$3 \times 4 = 12$

12 days

5. One bus leaves every **10** minutes, another every **15**. Both leave at 8:00. How many minutes later do both leave again?

10 , 20 , 30

30 minutes

6. The Maya 260-day count joins **13** numbers to **20** day names, each moving on one a day. After how many days do a number and a name meet again?

$13 \times 20 = 260$

260 days

7. A moon of **28** days starts on a Monday. A week has **7** days. After how many days does a moon start on a Monday again?

$28 \div 7 = 4$

28 days

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Calendars and Cycles

The Maya Calendar Round: when do two calendars meet?

The Maya 260-day count, the Tzolk'in, joins each of **13** numbers to each of **20** day names. The 365-day count, the Haab', has **18** months of **20** days and **5** more days. Maya day keepers in Guatemala still keep the 260-day count.

Haab' years	1	2	4	10	52
Days	365	730	1,460	3,650	18,980

Tzolk'in counts	1	2	10	73
Days	260	520	2,600	18,980

1. The Tzolk'in joins **13** numbers to **20** day names. How many days is it?

$$13 \times 20 = 260$$

Example

260 days

2. The Haab' is **18** months of **20** days, then **5** days. How many days is it?

$$18 \times 20 + 5 = 365$$

365 days

3. $260 = 5 \times 52$ and $365 = 5 \times 73$. What factor greater than **1** do **260** and **365** share?

5

4. The least common multiple of **260** and **365** is $5 \times 52 \times 73$. What is it?

$$260 \times 73 = 18{,}980$$

18,980 days

5. The Calendar Round is 18,980 days. How many 365-day years is that?

$$18{,}980 \div 365 = 52$$

52 years

6. How many 260-day counts are in the 18,980-day Calendar Round?

$$18{,}980 \div 260 = 73$$

73 counts

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