Duration of Years, Months, Seasons, Days, Hours.

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Differentiate and Assess

Not every student will be ready to investigate this concept at this Level and so we will need to differentiate to ensure every student is learning at their leading edge. Select the Differentiate button on this screen.

Integrate

Every mathematical concept is integrally related to other mathematical concepts. Teaching and learning related concepts simultaneously develops deep relational understanding. Select the Integrate button on this screen.

Intervene

Some students may not yet be ready to investigate this concept at any Level, and so we will need to provide some intervention. Select the Intervention button on this screen.

DURATION OF YEARS, MONTHS, SEASONS, DAYS, HOURS.

EXPLICIT TEACHING PLAN OVERVIEW PAGE

THIS PAGE IS A SUMMARY OF THE EXPLICIT TEACHING PLAN, INCLUDING STRATEGIC QUESTIONS, AND DESRIBING THE SEQUENCE WHICH WILL OCCUR OVER MULTIPLE LESSONS.

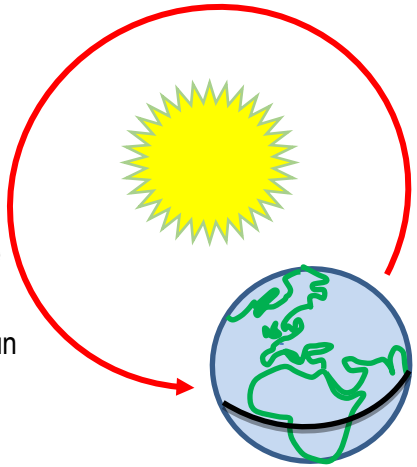
RESOURCES: MECHANICAL ANALOG CLOCKS WHERE THE HANDS MOVE IN SYNC, DIGITAL CLOCKS, PENCIL, PAPER

WHAT COULD WE DO?	WHAT LANGUAGE COULD WE USE TO EXPLAIN AND ASK QUESTIONS?
Children: • identify that years, days and seasons are caused by the movement and the tilt of the Earth • identify that a year has been divided into 12 months • identify that different months have different numbers of days • identify that a day has been divided into 24 hours	Children • ask one another questions about the duration of months, seasons, days and hours , for example: ▸ how does the movement of the Earth create years? ▸ how does the movement of the Earth create seasons? ▸ how does the movement of the Earth create days? ▸ how have people divided up the year into months? ▸ do all months have the same number of days? ▸ how have people divided up the day into hours?

DURATION OF YEARS, MONTHS, SEASONS, DAYS, HOURS.

EXPLICIT TEACHING PLAN

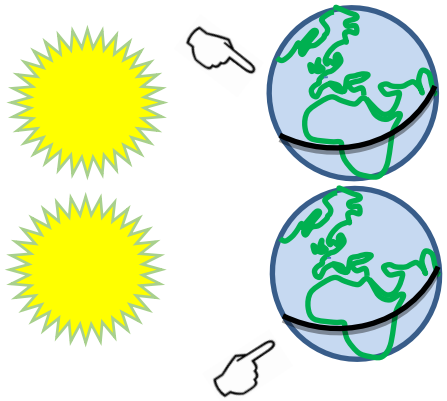
FULL EXPLICIT TEACHING PLAN, EMBEDDING DEEP RELATIONAL UNDERSTANDING, METALANGUAGE, AND QUESTIONS THAT MAY BE USED OVER MULTIPLE LESSONS.

WHAT COULD WE DO?	WHAT LANGUAGE COULD WE USE TO EXPLAIN AND ASK QUESTIONS?
Children think about, talk and listen to a friend about, then have the opportunity to share what they already know.	▸ Today brings an investigation about years, months, seasons, days and hours. ▸ What do you know about years, months, seasons, days, hours? ▸ Talk about years, months, seasons, days, hours with a friend. ▸ Is anyone ready to share what they are thinking about years, months, seasons, days and hours?
Display a globe and a sun, or a virtual globe revolving around the sun on a screen or select a child to be the sun and another child to be the Earth and walk the 'Earth' around the 'sun'. NB: The earth appears to revolve around the sun anti-clockwise when viewed from the north. The earth appears to revolve around the sun clockwise when viewed from the south. 	▸ Have you ever wondered why we have years and seasons and months and days and hours? ▸ This is the Earth, the planet that we live on. ▸ About 4 and a half billion years ago the Earth formed from a whole lot of dust. ▸ And it revolved around the sun. ▸ The Earth is still revolving around the sun right now.
Allow children to suggest the length of time they think it takes the Earth to revolve around the sun.	▸ How long do you think it takes the Earth to revolve all the way around the sun? ▸ **It takes 1 year for the Earth to revolve around the sun.** ▸ So no one invented a year. A year is just how long it takes the Earth to travel around the sun.

Display the tilted globe and a sun, or a virtual tilted globe revolving around the sun on a screen or select a child to be the sun and another child to be the Earth and tilt the 'Earth's face downwards.

Point to the part of the earth titled towards the sun, for example,

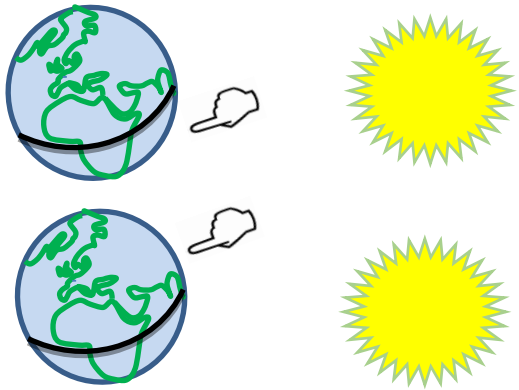
Point to the part of the Earth tilted away from the sun, for example,



Move the Earth around the sun until the tilt of the Earth begins to make the opposite hemisphere point towards the sun, for example,

Point to the part of the earth titled towards the sun, for example,

Point to the part of the Earth tilted away from the sun, for example,



- **So what about seasons?**
- Are the seasons Summer, Autumn, Winter and Spring?
- Have you ever wondered why we have seasons?
- As the Earth travels around the sun, it is tilted a little.
- So when the Earth is on this side of the sun, this part of the Earth is tilted upwards to face the sun.
- That's when it's summer in the part of the Earth that is tilted towards the sun.
- And winter in the part of the Earth that is tilted away from the sun.
- And when the Earth is on this side of the sun, this part of the Earth is tilted downwards away from the sun.
- That's when it's summer in the part of the Earth that is tilted towards the sun.
- And winter in the part of the Earth that is tilted away from the sun.
- And when the part of the Earth isn't tilting up or down, that's when it's Autumn or Spring.
- Because of the tilt of the Earth, when it is summer in one part of the world, it is winter in the other part of the world.
- And when it is autumn in one part of the world, it is spring in the other part of the world.

The seasons follow the same sequence in both the Northern and Southern hemispheres but are reversed - when it is summer in the northern hemisphere it is winter in the southern hemisphere.

In the Southern Hemisphere December, January, and February are Summer and in the Northern Hemisphere December, January, and February are Winter.

In the Southern Hemisphere March, April, and May are Autumn (Fall) and in the Northern Hemisphere March, April, and May are Spring.

In the Southern Hemisphere June, July and August are Winter and in the Northern Hemisphere June, July, and August are Summer.

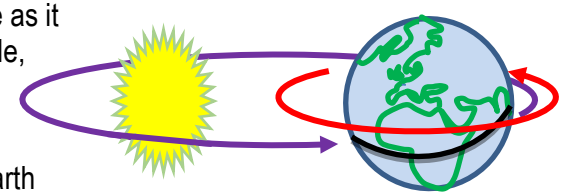
In the Southern Hemisphere September, October, and November are Spring and in the Northern Hemisphere September, October, and November are Autumn (Fall),.

NB: Some countries wait for the summer or winter solstice (longest or shortest day) before changing seasons.

- What season is it here now?
- Is summer a season?
- Is winter a season?
- Is spring a season?
- Is autumn a season? Is fall a season? Some people, for example, people from England and Australia, call the season autumn and some people, for example, people from the United States of America, call it fall – possibly because leaves fall in Autumn!
- So no one invented seasons.
- Seasons happen because the Earth is tilted.

Slowly spin the globe anti-clockwise as it revolves around the sun, for example,

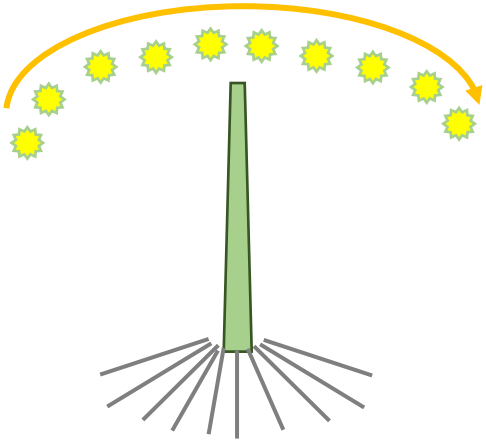
NB: The earth appears to revolve around the sun anti-clockwise when viewed from the north. The earth appears to revolve around the sun clockwise when viewed from the south.



- **So what about days?**
- What days do you know?
- Are the days Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday?
- Have you ever wondered why we have days?
- As the Earth travels around the sun, it is also spinning!
- When our side of the Earth faces the sun, it is daytime here.
- When our side of the Earth faces away from the sun, it is night time here!
- So no one invented days. Days happen because the Earth is spinning.

Display a picture of an obelisk, for example,

Draw the sun and the shadow 10 times, for example,



So what about hours?

- How many hours in a day? Let's investigate!?
- Around 3 thousand 500 years ago, the Ancient Egyptians broke the day into 10 units using the position of the sun in the sky during the day.
- They used shadows made from towers called obelisks.
- As the sun moved across the sky, the shadow of the obelisk moved.
- They broke the night into 12 units using the position of certain stars in the sky during the night.
- And they added another unit in the morning between night and day.
- And they added another unit in the evening between day and night.
- This added up to 24 units.
- But not all of these units were the same length.
- Then about 2 thousand years ago, the Ancient Greeks moved into Ancient Egypt and liked having the day divided into 24 units but they decided to make the units all the same length by dividing the day into 24 equal units.

Display a calendar (current year freely available on the internet).

NB: Children from different cultures may know about months in their culture's calendar. For example, the Chinese calendar (Chinese New Year) and Islamic calendar (Ramadan is the name of a month) are lunar calendars so dates and the duration of months change from year to year.

What about months?

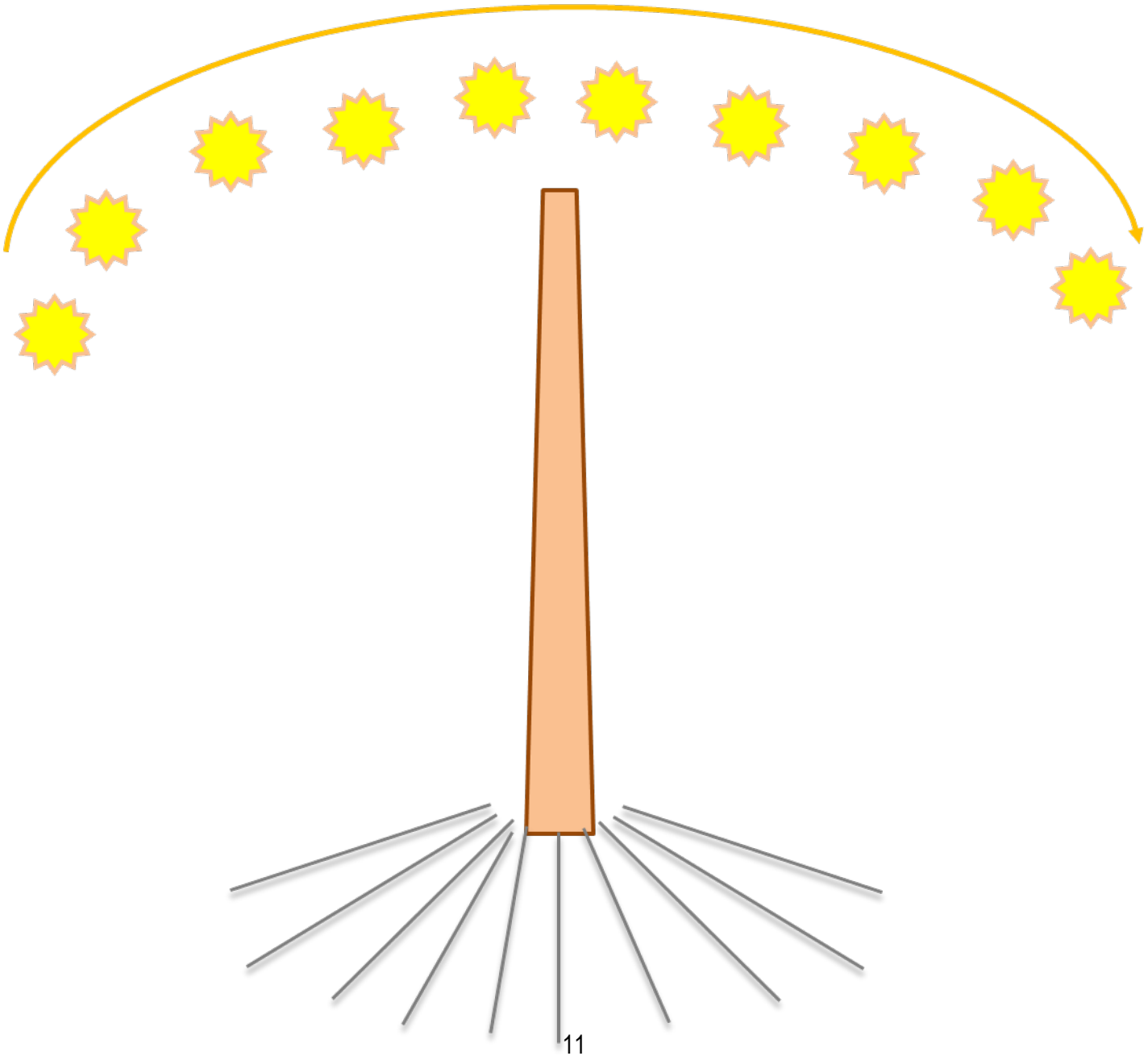
- Well, a year is a long time – 365 days.
- So people decided to divide the year up into 12 smaller units.
- We call these smaller units 'months'.
- What months do you know?
- Are the months January, February, March, April, May, June. July, August, September, October, November. December.
- Do all of the months have the same number of days? Let's investigate!

- What is this?
- Is this a calendar?
- People from different cultures have different calendars.
- Some cultures still use their calendars for religious ceremonies and cultural celebrations.
- This calendar is the one everyone around the world uses so we all think it is the same date!
- What units of time can you see on the calendar?
- Can you see some months?
- Can you see some days?

Point to the months on the calendar in order. Record, for example, January, 31 days. Record, for example, February, 28 days. Record, for example, March, 31 days. Record, for example, April, 30 days. Record, for example, May, 31 days. Record, for example, June, 30 days. Record, for example, July, 31 days. Record, for example, August, 31 days. Record, for example, September, 30 days. Record, for example, October, 31 days. Record, for example, November, 30 days.	► Let's investigate the number of days in each month. ► How many days in January? ► Are there 31 days in January? ► How many days in February? ► Are there 28 days in February? ► How many days in March? ► Are there 31 days in March? ► How many days in April? ► Are there 30 days in April? ► How many days in May? ► Are there 31 days in May? ► How many days in June? ► Are there 30 days in June? ► How many days in July? ► Are there 31 days in July? ► How many days in August? ► Are there 31 days in August? ► How many days in September? ► Are there 30 days in September? ► How many days in October? ► Are there 31 days in October? ► How many days in November? ► Are there 30 days in November? ► How many days in December?

Record, for example, December, 31 days. Display a calendar from a leap year, for example, 2016, 2020 etc.	► Are there 31 days in December? ► So some months have 30 days and some months have 31 days, and one month has 28 days. ► Does each month have the same number of days every year? ► Not quite! ► We know the year is the amount of time the Earth takes to travel around the sun – 365 days. ► But it doesn't take exactly 365 days. The Earth travels around the sun in 365 days plus a few extra hours. ► So the people who made up the calendar made a year 365 days long. ► But the few extra hours add up and after 4 years, the calendar is 1 whole day out. ► So every four years we have an extra day in the calendar - February 29. ► The year when February has 29 days is called a leap year. ► Do the months always come in the same order? ► How many months are there? ► Are there 12 months every year? ► In which month is your birthday? ► So we have years, months, seasons, days and hours. ► The years, seasons and days happen because of the Earth rotating and revolving around the sun. ► The months and days have been invented by people.

Hours (back)



Calendar (back)

JANUARY						
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
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	31				

FEBRUARY						
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
			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				

MARCH						
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
			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	31	

APRIL						
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
						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						

MAY						
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
	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	31			

JUNE						
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
				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	

JULY						
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
						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	31					

AUGUST						
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
		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	31		

SEPTEMBER						
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
					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

OCTOBER						
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
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	31				

NOVEMBER						
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
			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		

DECEMBER						
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
					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
31						