

# What Can Kesler Science Do for You?

4th - 8th grade science teachers love our Life, Earth, and Physical Science materials! With these easy and engaging materials, teachers can save planning time and put their focus back on the teaching that really matters.



## 5E LESSONS

Two-week lessons with over 100 topics



## ESCAPE ROOMS

Engaging activities for review



## INQUIRY LABS

Three different levels to fit every student



## AMAZING ANCHORS

Anchoring phenomenon to book-end your lessons



## SUB PLANS

Never worry about planning for a sub again.



## WARM-UPS

Bellringers for the entire year



## STATION LABS

Student-led exploration



## INTERACTIVE NOTEBOOKS

Bring science journals to life.



## WIKI TICKETS

Quick formative assessments



## STEM CHALLENGES

Real-world STEM problem-solving



## GRAPHING

Table and charts and graphs ... OH MY!



## SCIENCE READING COMPREHENSION

Leveled reading passages with mini-activities



## SPANGLER COLLABORATION

Exclusive Steve Spangler lessons and videos



## WRITING PROMPTS

Writing activities covering 100+ topics

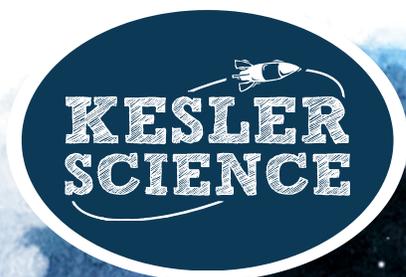


## EXPLORIES

Story-driven units with integrated activities



The Kesler Science Professional Learning Network (PLN) group on Facebook has a huge community of engaged and supportive science teachers - come join us!



## Leap Years and the Summer Solstice

You know our journey around the Sun actually takes a smidge more than the neat 365 days we mark on our calendars. To keep everything in sync, scientists as far back as Julius Caesar's time (!) have been adding an extra day to the calendar every few years.

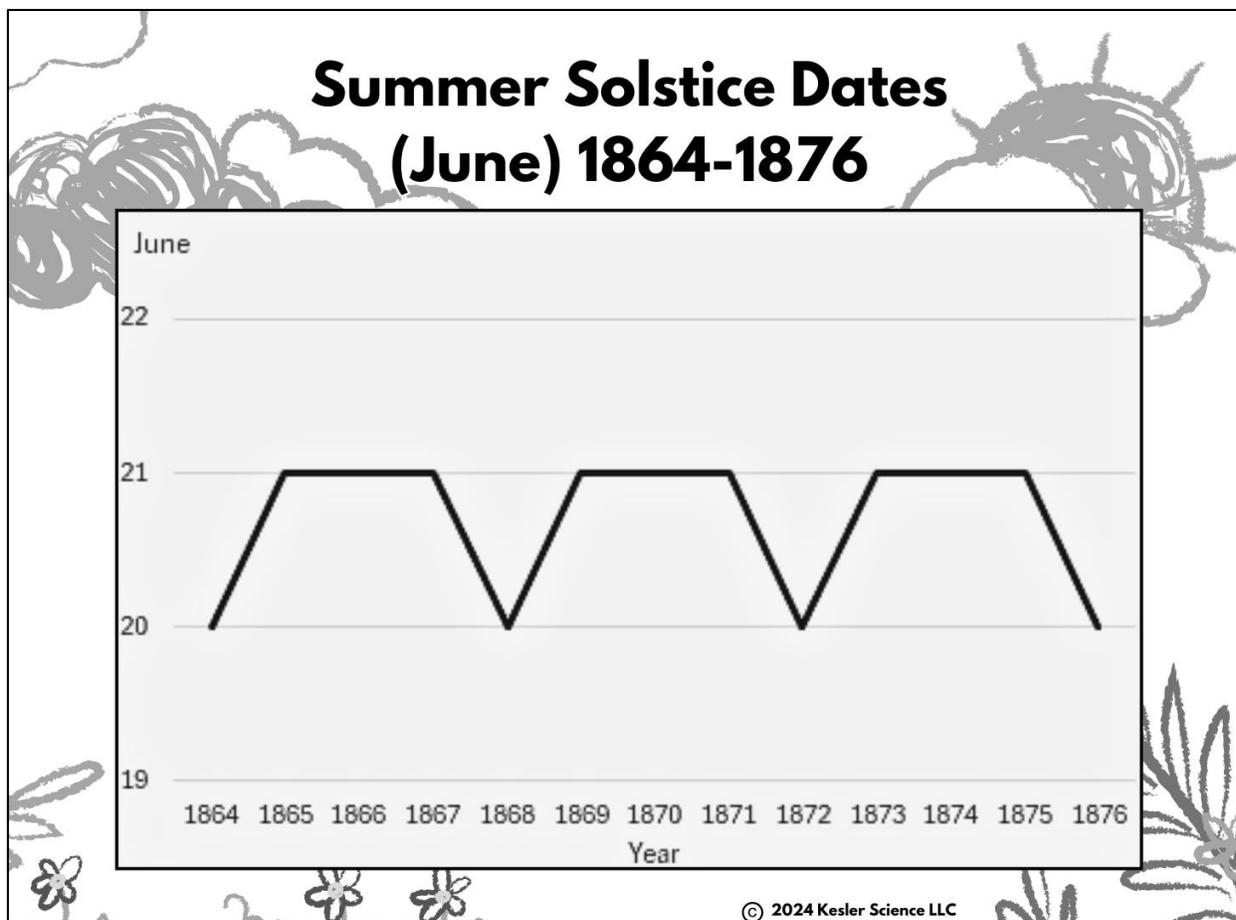
This isn't a perfect solution, though. Way back in 1582, scientists noticed that adding a leap day EVERY four years would add 44 minutes per cycle!

To keep our seasons from drifting around the calendar, we skip the leap year for every century mark that isn't a multiple of

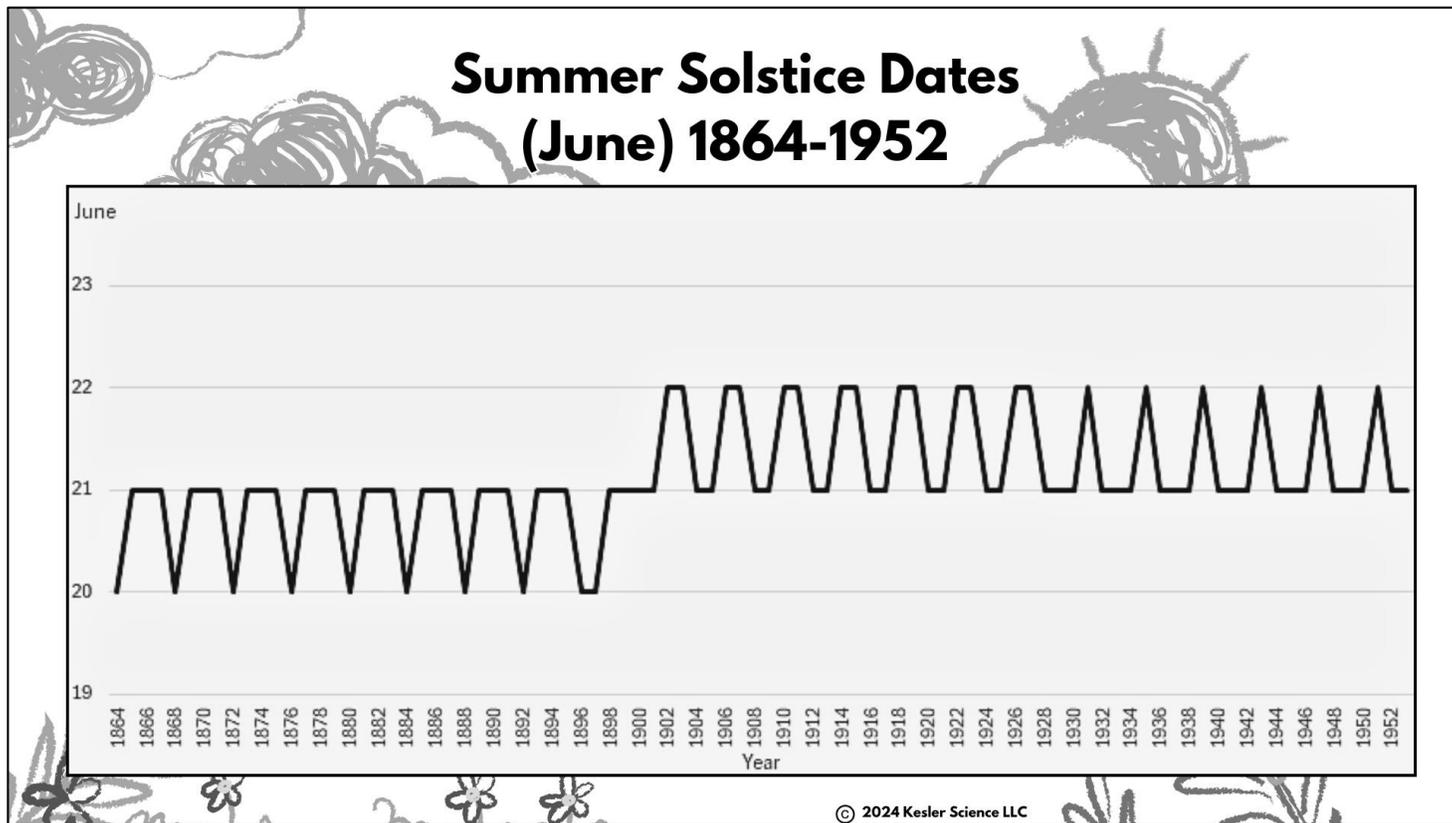
400. Years like 1700 or 2100, despite being every fourth year, don't get that extra day.

If you're looking to incorporate this phenomenon into your classroom, you could have students write a creative scientific narrative of what life would be like if we didn't use leap years. Hint: in 700 years, the Northern Hemisphere would experience summer in December! 🤖

One way to see this effect is to look at the pattern of the summer solstice dates, in the graph below. Every four years, the date shifts back a day ... then drifts over the next three.



Check out what happens when there is no leap year, like in 1900! Now the summer solstice cycle is a whole day later!



1. According to the first graph, during which years did the summer solstice fall on June 20th?

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2. What change happened to the summer solstice day in the year 1900?

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3. Looking at the second graph, what pattern do you observe from the years 1902 to 1952?

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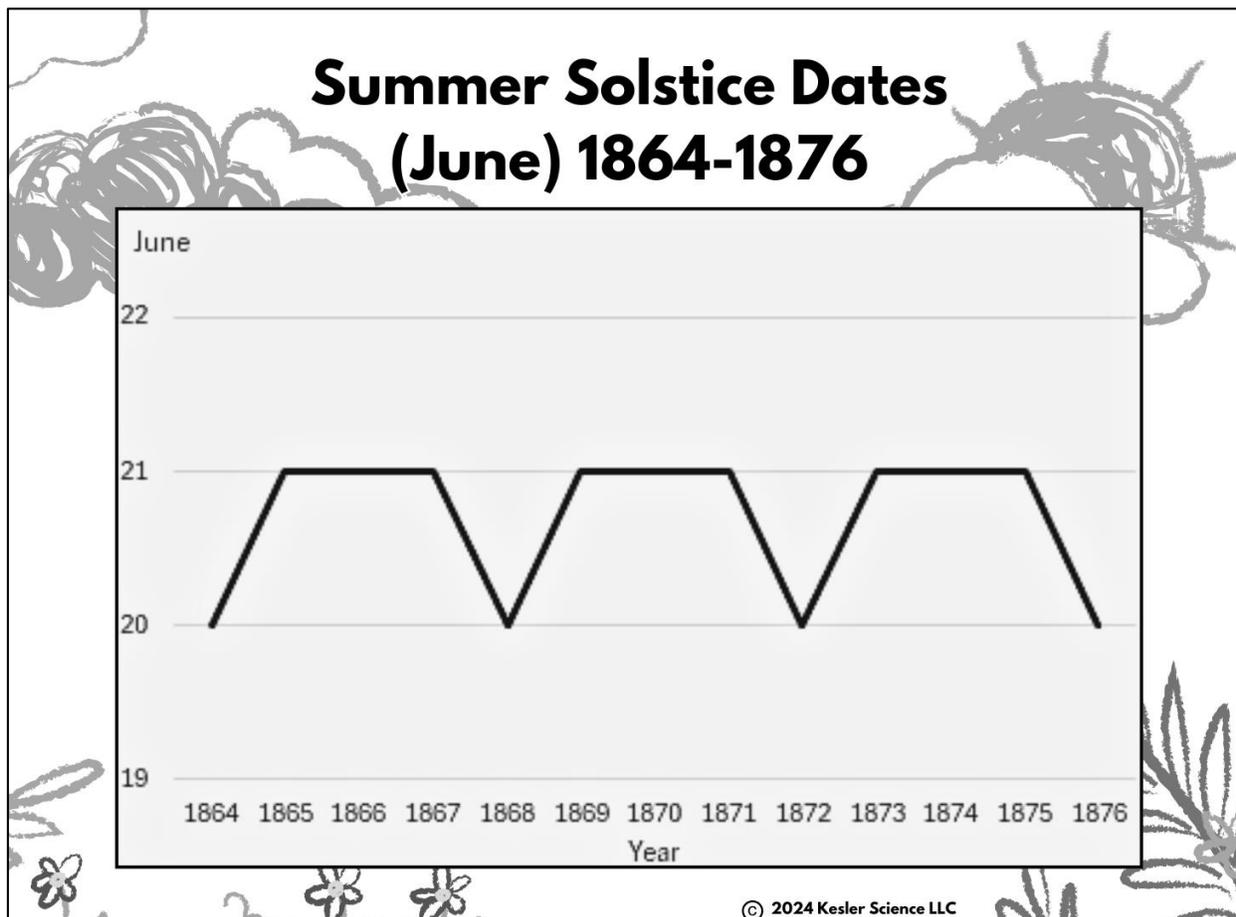
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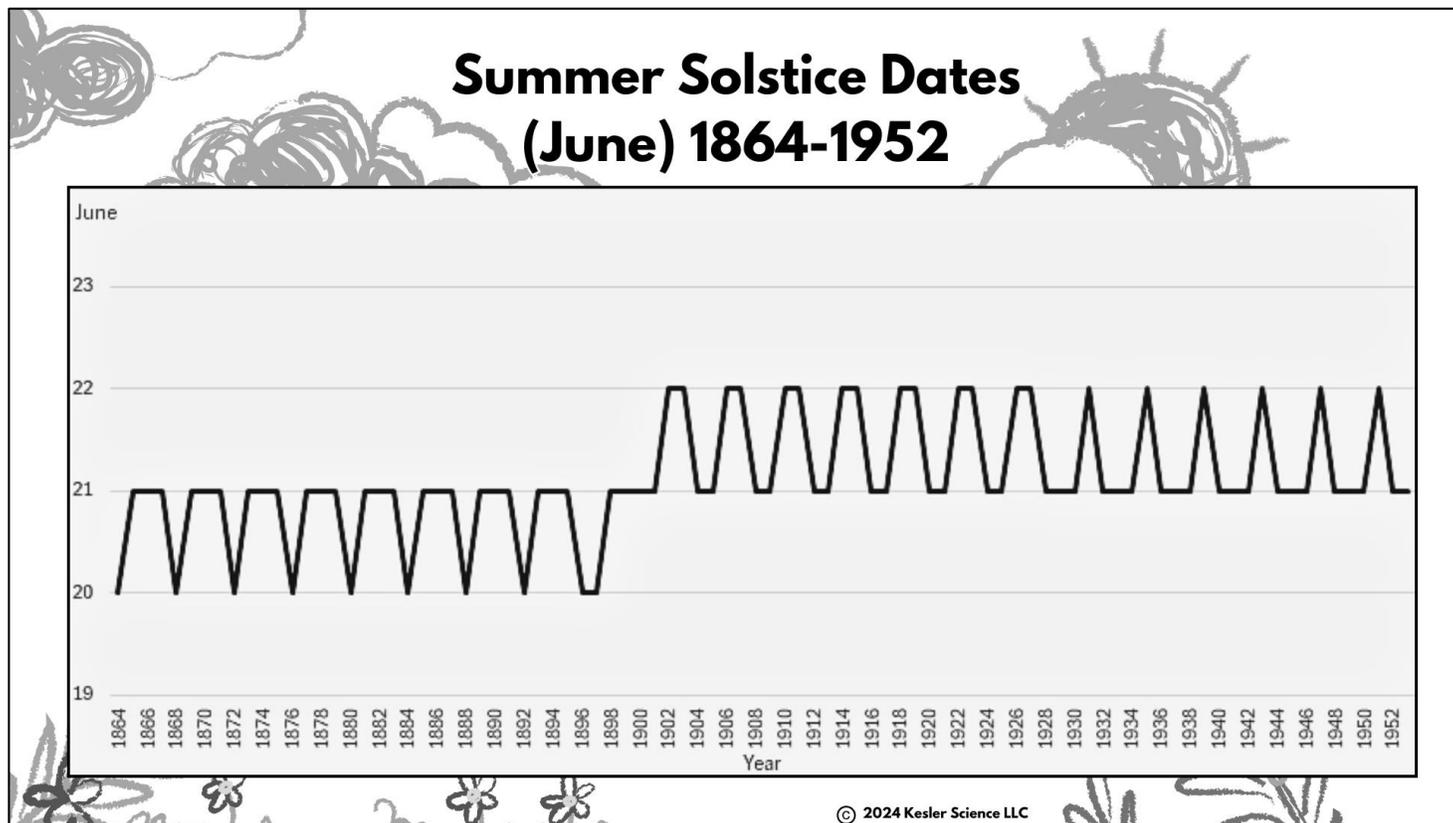
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Check out what happens when there is no leap year, like in 1900! Now the summer solstice cycle is a whole day later!

*This is a great way to show your class patterns of the Sun and Earth, and the effects of the leap year on the way we mark our seasons. (If you keep looking into it, you'll find it gets even weirder every 400 years 🤯!)*



1. According to the top graph, during which years did the summer solstice fall on June 20th?

*Summer solstice was on June 20th in 1864, 1868, 1872, and 1876.*

2. What change happened to the summer solstice day in the year 1900?

*Summer solstice bumped forward a day to June 21st.*

3. Looking at the bottom graph, what pattern do you observe from the years 1902 to 1952?

*The summer solstice days alternate between June 22 and June 21. As the years go on, the summer solstice falls on June 22nd less often and June 21st more often.*