

Name _____

Units of Time

Essential Question How can you use models to compare units of time?



Measurement and Data—4.MD.A.1
Also 4.MD.A.2

MATHEMATICAL PRACTICES
MP1, MP5, MP7

Unlock the Problem Real World

The analog clock below has an hour hand, a minute hand, and a **second** hand to measure time. The time is 4:30:12.



Read Math

Read 4:30:12 as 4:30 and 12 seconds, or 30 minutes and 12 seconds after 4.

- Are there more minutes or seconds in one hour?

There are 60 seconds in a minute and 60 minutes in an hour. The clocks show how far the hands move for each length of time.



Start Time: 3:00:00



1 second elapses.

The time is now 3:00:01.



1 minute, or 60 seconds, elapses. The second hand has made a full turn clockwise.

The time is now 3:01:00.



1 hour, or 60 minutes, elapses. The minute hand has made a full turn clockwise.

The time is now 4:00:00.

Example 1 How does the size of an hour compare to the size of a second?

There are _____ minutes in an hour.

There are _____ seconds in a minute.

60 minutes \times _____ = _____ seconds

There are _____ seconds in a hour.

So, 1 hour is _____ times as long as 1 second.

Think: Multiply the number of minutes in an hour by the number of seconds in a minute.

Math Talk

MATHEMATICAL PRACTICES 1

Analyze How many full turns clockwise does a minute hand make in 3 hours? Explain.

Example 2 Compare measures.

Larissa spent 2 hours on her science project.
Cliff spent 200 minutes on his science project.
Who spent more time?

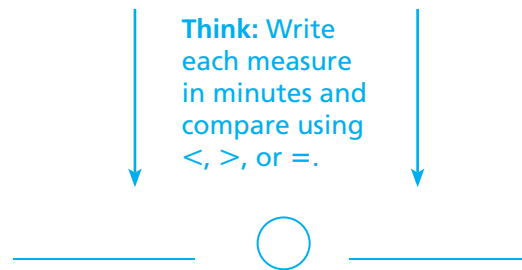
STEP 1 Make a table that relates hours and minutes.

Hours	Minutes
1	60
2	
3	

STEP 2 Compare 2 hours and 200 minutes.

2 hours 200 minutes

Think: Write each measure in minutes and compare using $<$, $>$, or $=$.



2 hours is _____ than 200 minutes.

So, _____ spent more time than _____ on the science project.

Activity Compare the length of a week to the length of a day.

Materials ■ color pencils

The number line below shows the relationship between days and weeks.

STEP 1 Use a color pencil to shade 1 week on the number line.



STEP 2 Use a different color pencil to shade 1 day on the number line.

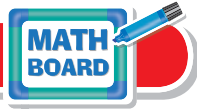
STEP 3 Compare the size of 1 week to the size of 1 day.

There are _____ days in _____ week.

So, 1 week is _____ times as long as 1 day.

Name _____

Share and Show



1. Compare the length of a year to the length of a month. Use a model to help.



1 year is _____ times as long as _____ month.

Complete.

2. 2 minutes = _____ seconds

3. 4 years = _____ months

Units of Time

1 minute (min) = 60 seconds (s)
 1 hour (hr) = 60 minutes
 1 day (d) = 24 hours
 1 week (wk) = 7 days
 1 year (yr) = 12 months (mo)
 1 year (yr) = 52 weeks

Math Talk

MATHEMATICAL PRACTICES 4

Use Models Explain how the number line helped you compare the length of a year and the length of a month.

On Your Own

Complete.

4. 3 minutes = _____ seconds

5. 4 hours = _____ minutes

MATHEMATICAL PRACTICE 4 Use Symbols Algebra Compare using $>$, $<$, or $=$.

6. 3 years 35 months

7. 2 days 40 hours

Problem Solving • Applications



8. **GO DEEPER** Damien has lived in the apartment building for 5 years. Ken has lived there for 250 weeks. Who has lived in the building longer? Explain. Make a table to help.

Years	Weeks
1	
2	
3	
4	
5	

9. **THINK SMARTER** How many hours are in a week? Explain.



10. **MATHEMATICAL PRACTICE 5 Communicate** Explain how you know that 9 minutes is less than 600 seconds.

11. **THINK SMARTER** Draw lines to match equivalent time intervals. Some intervals might not have a match.

1 hour



2 hours



5 hours



12 hours



48 hours



2 days



120 minutes



4 days



3,600 seconds



300 minutes

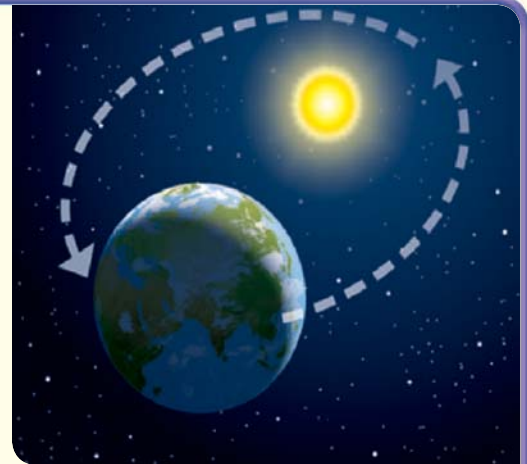


Connect to Science

One day is the length of time it takes Earth to make one complete rotation. One year is the time it takes Earth to revolve around the sun. To make the calendar match Earth's orbit time, there are leap years. Leap years add one extra day to the year. A leap day, February 29, is added to the calendar every four years.

1 year = 365 days

1 leap year = 366 days



12. How many days are there in 4 years, if the fourth year is a leap year? Explain. Make a table to help.

13. Parker was born on February 29, 2008. The second time he is able to celebrate on his actual birthday is in 2016. How many days old will Parker be on February 29, 2016?

Years	Days
1	
2	
3	
4	

Name _____

Units of Time



COMMON CORE STANDARD—4.MD.A.1
Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

Complete.

1. 6 minutes = 360 seconds

Think: 1 minute = 60 seconds,
so 6 minutes = 6×60 seconds, or 360 seconds

2. 5 weeks = _____ days

3. 3 years = _____ weeks

4. 9 hours = _____ minutes

5. 9 minutes = _____ seconds

Compare using $<$, $>$, or $=$.

6. 2 years 14 months

7. 3 hours 300 minutes

8. 2 days 48 hours

9. 6 years 300 weeks

Problem Solving



10. Jody practiced a piano piece for 500 seconds. Bill practiced a piano piece for 8 minutes. Who practiced longer? **Explain.**

11. Yvette's younger brother just turned 3 years old. Fred's brother is now 30 months old. Whose brother is older? **Explain.**

12. **WRITE** *Math* Explain how you can prove that 3 weeks is less than 24 days.

Lesson Check (4.MD.A.1)

1. Glen rode his bike for 2 hours. For how many minutes did Glen ride his bike?
2. Tina says that vacation starts in exactly 4 weeks. In how many days does vacation start?

Spiral Review (4.NF.B.3b, 4.NF.C.5, 4.MD.A.1, 4.MD.A.2)

3. Kayla bought $\frac{9}{4}$ pounds of apples. What is that weight as a mixed number?
4. Judy, Jeff, and Jim each earned \$5.40 raking leaves. How much did they earn together?

5. Melinda rode her bike $\frac{54}{100}$ mile to the library. Then she rode $\frac{4}{10}$ mile to the store. How far did Melinda ride her bike in all? Write your answer as a decimal.
6. One day, the students drank 60 quarts of milk at lunch. How many pints of milk did the students drink?

