# Mathematical Melodies

# Tick, Tock

Music and Lyrics by Lisa Fenwick

Tick Tock
Time to get up
It's 7 o'clock
Can't miss the bus
I'll have to walk
I don't want to be late
It's almost 8

Gotta brush my teeth
And take a shower
Have to be quick
Got half an hour
I'm always in a rush
Oh, there's the bus

(Chorus)
60 seconds in a minute
60 minutes in an hour, so
15 minutes is quarter past and
30 minutes makes half an hour
45 minutes is quarter to
I know my time
How about you?
Gotta keep my eye on time
Throughout the day

My first class is gym
It runs till 10
Next, I have some science
About spacemen
Time seems to go so quick
A constant tick, tick

Almost time for lunch
It's 12:15

Almost time for lunch,
It's 12:15
Hope there's something better
Than sardines
Lunch always goes so fast
It never lasts
(Chorus)

# Tick Tock

## Primary/Junior: Grade 3, Grade 4 and Grade 5

## The Big Ideas

Ti… een or felt and for this reason it c… ifficult measurement to comprehend. Time can be thought of as the duration of an event from its beginning to its end. Comparing events of different durations is helpful here. The clock is the common tool used to measure time. Learning to tell time has little to do with the measurement of time and more with the skills of learning to read a dial type of instrument.

For primary students beginning with a one-handed clock is helpful as it can be read more easily. Using language that approximates time is also recommended.

For junior students who are having difficulty with time, using one handed clocks may be the help needed. For other junior students who can read an analog clock working on elapsed time would be recommended. A sketch of an empty time line can be helpful in solving elapsed time problems.

## Curriculum Connections

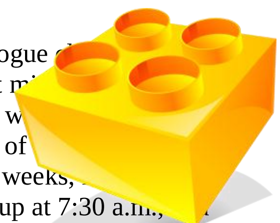
### Measurement

Attributes, Units and Measurement Sense:

Grade 3

- read time using analogue clocks, to the nearest five minutes, and using digital clocks (e.g., 1:23 means twenty-three minutes after one o'clock), and represent time in 12-hour notation

Grade 4



- estimate, measure (i.e., using an analogue c… represent time intervals to the nearest m…
- estimate and determine elapsed time, w… using a time line, given the durations of … in five-minute intervals, hours, days, weeks, … years (Sample problem: If you wake up at 7:30 a.m., … it takes you 10 minutes to eat your breakfast, 5 minutes to brush your teeth, 25 minutes to wash and get dressed, 5 minutes to get your backpack ready, and 20 minutes to get to school, will you be at school by 9:00 a.m.?)

Grade 5

- estimate, measure (i.e., using an analogue clock), and represent time intervals to the nearest second;
- estimate and determine elapsed time, with and without using a time line, given the durations of events expressed in minutes, hours, days, weeks, months, or years (Sample problem: You are travelling from Toronto to Montreal by train. If the train departsToronto at 11:30 a.m. and arrives in Montreal at 4:56 p.m., how long will you be on the train?);

# Inaugural Voyage

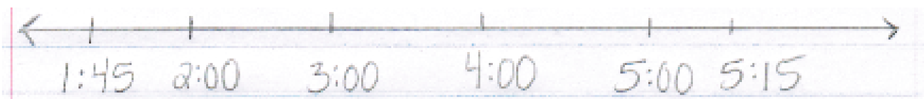
## One way to introduce elapsed time....

Traditionally students have been taught how to solve elapsed time problems by subtracting the start time from the end time. For many students this can be confusing and difficult. Teaching a visual way to solve elapsed time problems provides students with a tool to help problem solve with a pencil and their mind.

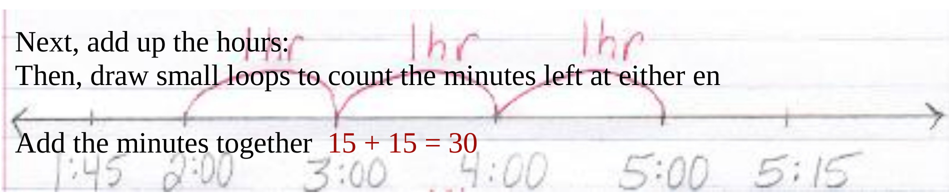
Our Problem: You are going on a family trip. Your car leaves at 1:45 and arrives at 5:15. How long was your trip?

First, draw a timeline:

Draw in the times at the start and finish. Be sure to add ticks to represent the hours as you go:




Now draw big loops to count the hours:

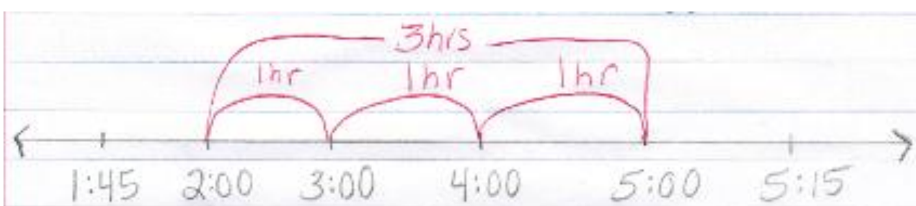


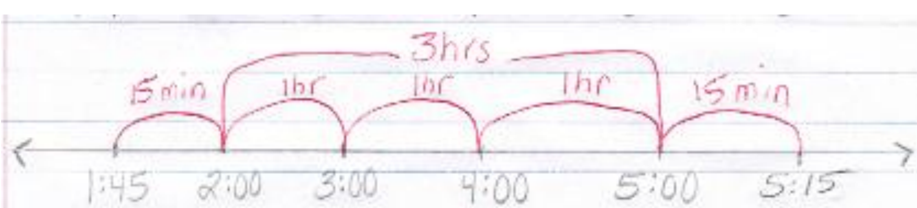

Next, add up the hours:

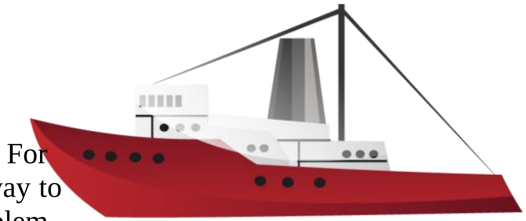
Then, draw small loops to count the minutes left at either en

Add the minutes together 15 + 15 = 30

Finally, combine the hours and minutes together and Voila! 3 hours and 30 minutes



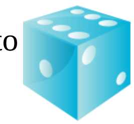



# Let's Play a Game

How many hours did you spend sleeping last week?

Students work in pairs to this out.



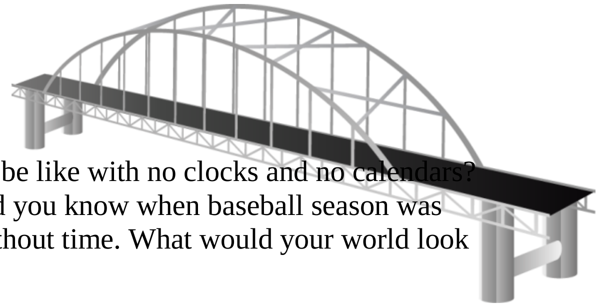
Answer: For the average 10 year old who sleeps 10 hours a night x 7 days a week = 70 hours a week

Students could then pick another activity to calculate the amount of time they use participating in it.

# Hands On! Paper Plate Math....

Using three paper plates, the same size, but two different colors, students create their own clocks (two plates will be the same color). Students cut from one edge of each plate to the centre of both plates. Stack two plates together and line up their slits. Slide the stacked plates through the other plate until the centers meet. Turn two plates to show all three colors.

Students now hold a clock in their hands where they can practice showing telling time using half past, quarter to, etc.).



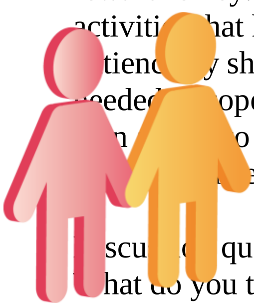
## Cross Curricular - Language

Choice A: How Do You Know What Time It Is? What would life be like with no clocks and no calendars? How would you know when to get up in the morning? How would you know when baseball season was about to start?  Using your imagination write a story about life without time. What would your world look like? Would anyone age?

Choice B: If time travel exists. Where would you go? Write a story about a character who can travel through time.

For both choices make sure you have all the elements of a good story: well developed characters, well described setting, and a plot that has a beginning, middle and end. Edit!

## Character Education



Patience.  In today's fast paced world encouraging children to exercise patience is essential. Waiting and self-control are two basic requirements for working well at school. Encouraging children to exercise self-control as well as teaching them to wait to earn a reward is key. Playing board games, baking and planting are activiti[illegible] hat help children develop patience.  Teaching children [illegible]tienc[illegible] y showing them how is also useful. Modeling the self talk [illegible]eeded [illegible] ope with frustation out loud helps children develop their [illegible]n [illegible] o self-talk. A beautiful book to open the discussion [illegible] e is A Butterfly is Patient by Dianna Aston.

[illegible]scu[illegible] questions to explore:
[illegible]hat [illegible] you think the author means when she writes, "A butterfly is patient?" How is a butterfly patient? Are humans like butterflies, are we patient? What do we need to be patient about? Would any of you like to share a time when you were patient? How about impatient? What strategies can we use when we are trying to be patient?

"

## Multi-Media

Websites:
Time Monsters game:
http://www.timemonsters.com/

Time resources that are good for students and teachers:
http://www.time-for-time.com

Time Telling Quiz:
http://www.thatquiz.org/tq-g/math/time/

SMARTBOARD: ELAPSED TIME:
http://exchange.smarttech.com/search.html?q=elapsed+time

Thematic Imaginings

# Water Alarm Clocks...

BOOK: <u>The Warlord’s Alarm</u> by Virginia Walton Pilegard

Cross-curricular: mathematics, science/technology (Grade 5: Conservation of Energy and Resources) and social studies (Grade 5: Ancient Civilizations).

Do you think we can tell time using water? In teams, students work together to design a water alarm clock using the chart paper and markers provided. Once designed, students share their ideas with each other discussing the accuracy and ingenuity of their ideas. Once shared, the class will listen to the book <u>The Warlord’s Alarm</u> by Virginia Walton Pilegard.

A Quick synopsis: While traveling to an important feast in ancient China, Chuan and his friend Jing Jing devise a water "alarm" clock to make sure their party reaches the emperor's palace before rival warlords.

After hearing the book students will edit their designs and create a list of materials needed to actually create their clocks. Once materials are collected, students will build and test their water alarm clocks the following few days. The winning design will be voted on and the clock that wins will be used to keep time in the classroom.

Author’s website:http://www.virginiapilegard.com/

# Picture This!

## More Literature links for telling time.

### Fiction:

The Magic Treehouse Series by Mary Pope Osborne
In the first series (The Magic Treehouse), consisting of the first 28 books, Morgan le Fay sends Jack and Annie, two normal children from Frog Creek, Pennsylvania, on numerous adventures and missions with a magical tree house in order to help free Morgan from a spell, solve four ancient riddles to become Master Librarians, and save four ancient stories from being lost forever.

Tanglewreck by Jeanette Winterson (2006) (Ages 9-12)
Eleven-year-old Silver sets out to find the Timekeeper--a clock that controls time--and to protect it from falling into the hands of two people who want to use the device for their own nefarious ends.

Telling Time All The Time by Jean Sharp (2007).
The busy children of Park Street have things to do at every hour and half hour from 7:00 in the morning to 8:30 at night, and analog and digital clocks in the corners of the illustrations reveal the times for all their activities.

### Non-Fiction:

Telling Time by Patricia Murphy (2007)
Using simple text and illustrations, describes how people have told time over the ages, from sundials to modern clocks.

Elapsed Time at the Olympics by Diane Irving (2010)
Introduces elapsed time and describes how it is used in practical situations, including the planning and recording of the Olympic games.

Tools of Timekeeping by Linda Formichelli (2005)
From ancient civilization's earliest calendars and shadow clocks to the atomic clocks of today, the history of time measurement is covered and combined with fifteen hands-on activities to help demonstrate humans' changing relationship with time over the centuries.

Time by Penny Dowdy (2008)
Introduces the concept of time, using everyday activities and items to demonstrate how it is measured.

How Do You Know What Time It Is? by Robert Wells
Long, long ago, all people could do was watch the sun and moon and try to figure things out. Eventually, they made simple clocks like sundials. And as time marched on, people came up with more ways to measure it. Today, quartz crystal watches and atomic clocks tell us EXACTLY what time it is, at any moment, all over the world.

A Child's Calendar by John Updike (1999)
A collection of twelve poems describing the activities in a child's life and the changes in the weather as the year moves from January to December.

The Man Who Made Time Travel by Kathryn Lasky (2003)
Describes the need for sailors to be able to determine their position at sea and the efforts of John Harrison, an eighteenth century man who spent his life refining instruments to enable them to do this.

All content for Picture This was provided by Novelist (http://www.ebscohost.com/novelist/).

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