Construct and Interpret Timelines using Scale.

Table of Contents

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.

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CONSTRUCT AND INTERPRET TIMELINES USING SCALE.

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: GRID PAPER (see below), RULER, PENCIL, PAPER

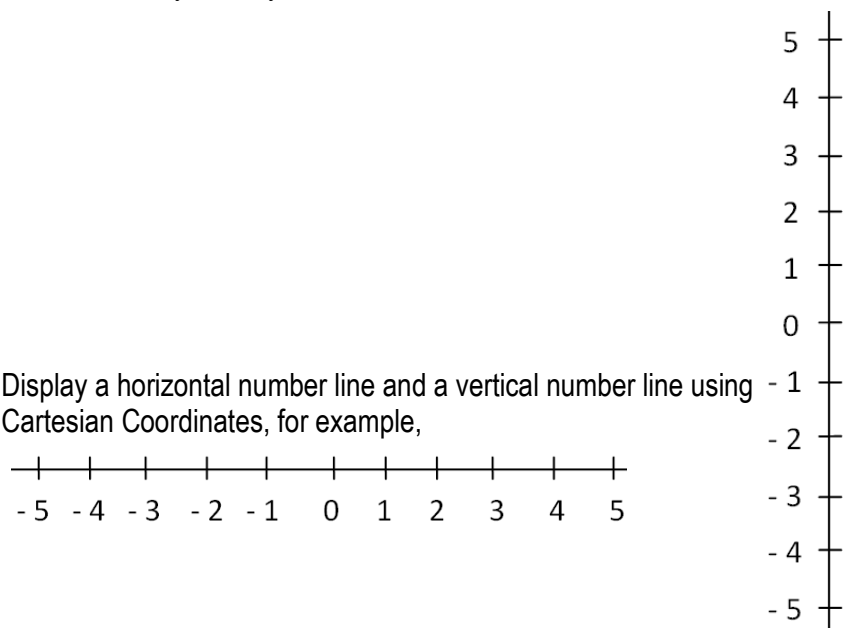| WHAT COULD WE DO?	WHAT LANGUAGE COULD WE USE TO EXPLAIN AND ASK QUESTIONS?
Children: • Discuss the relationship between number lines, timelines and Cartesian Planes • Plot events on a vertical timeline using a scale of one year equals one centimetre. • Plot events on a horizontal timeline using a more complex scale of one unit equals one hour.	Children • ask one another questions about constructing and interpreting timelines using scale, for example: ► How could we use Cartesian coordinates in one dimension to plot events on a timeline? ► If the child's life starts in 2009, which end of the timeline will 2009 go? Why? ► Could each year be represented by a mark on the timeline? ► If each year is represented by a mark on the timeline, which mark would be 2013? ► How many hours could be one unit on the grid? ► Will 8:15 be a quarter of a unit past the 8 o'clock? ► Will we have room to record 9 o'clock and the event beneath the timeline? ► Could we record this time using 24 hour time?

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# CONSTRUCT AND INTERPRET TIMELINES USING SCALE.

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. Display a horizontal number line and a vertical number line using Cartesian Coordinates, for example, - 5 - 4 - 3 - 2 - 1 0 1 2 3 4 5 5 4 3 2 1 0 - 1 - 2 - 3 - 4 - 5	► Today brings an investigation about timelines. ► What do you know about timelines? ► Talk about timelines with a friend. ► Is anyone ready to share what they are thinking about timelines? ► We've been investigating placing numbers on a number line since you were in Kindergarten. ► We've investigated placing numbers on a horizontal number line and on a vertical number line. ► And we found that the numbers get higher as we move to the right and as we move upwards. ► And we found that the numbers get lower as we move to the left and as we move downwards. ► We've investigated joining the vertical and horizontal number lines into a Cartesian plane.

Record a vertical line on

3

[square centimetre grid paper](), for example,

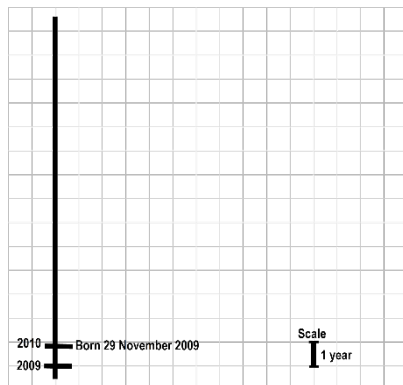Record a base line and 2009 at the bottom end of the number line, for example,

2009
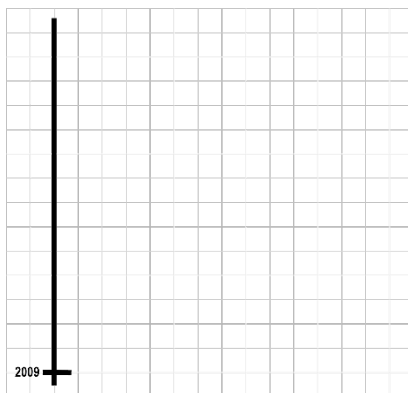
Record the scale on the timeline, for example,
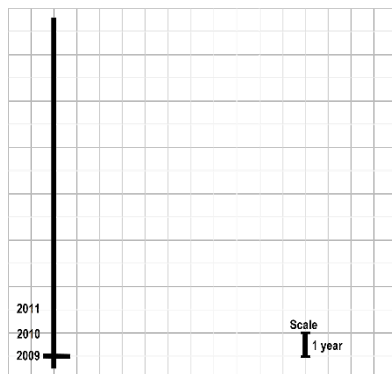
2009

Scale
1 year
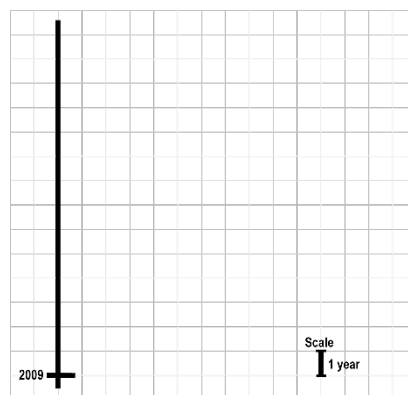
- ▸ Today we're going to investigate using a number line as a timeline.
- ▸ How could we use Cartesian coordinates in one dimension to plot events on a timeline? Let's investigate!
- ▸ Let's record a vertical line.
- ▸ We're going to plot some points in the life of a child.
- ▸ Let's imagine that the child was born in 2009.
- ▸ If the child's life starts in 2009, which end of the timeline will 2009 go? Why?
- ▸ Will the 2009 go at the bottom of the timeline so we can enter later dates as we go upwards on the timeline?
- ▸ Let's record a base line on our timeline and record 2009.

- ▸ What scale could we use on our vertical timeline?
- ▸ Could 1 year be as many centimetres as we want it to be? Is it our scale?
- ▸ Could we use the scale, 1 year = 1 centimetre?
- ▸ I am going to make my scale 1 year = 1 centimetre.

Record a mark and 29 November 2009, born, eleven-twelfths of a centimetre from the base line, for example,

2010 — Born 29 November 2009
2009

Scale
| 1 year

- ► Let's imagine the child was born on 29 November 2009.
- ► Where would 29 November 2009 go on our timeline?
- ► Are there 12 months in a year?
- ► So in our scale where 1 year = 1 centimetre, is 1 month one-twelfth of a centimetre?
- ► Is 29 November 2009 almost 11 months since the start of 2009?
- ► Is 29 November about eleven-twelfths of the way through 2009?
- ► If the scale on our timeline is 1 year = 1 centimetre, will 29 November be about eleven-twelfths of a centimetre?
- ► Let's place a mark at eleven-twelfths of a centimetre from the base line and record 29 November, born.

Record 2010 and 2011,
for example,

2011
2010
2009

Scale
| 1 year

- ► Let's imagine the child started day care on 28 January 2011.
- ► If the scale on our timeline is 1 year = 1 centimetre where will 28 January 2011 go?
- ► Where would the start of 2011 go?
- ► Would 2010 start 1 centimetre above the start of 2009?
- ► Would 2011 start 1 centimetre above the start of 2010?
- ► So would 2011 start 2 centimetres above the start of 2009?
- ► If our scale is 1 year = 1 centimetre, does it make sense that the start of 2011 would be 2 centimetres above the start of 2009?
- ► So we know where the start of 2011 would go, but what about 29 January 2011?
- ► Are there 12 months in a year?
- ► So in our scale where 1 year = 1 centimetre, is 1 month one-twelfth of a

Record a mark, started day care,
one-twelfth of a centimetre above
the start of 2011, for example,

Record 2012, 2013, 2014, and 2015,
for example,

Record a mark and 28 January 2011,
started school, one-twelfth of a
centimetre above the start of 2011,
for example,
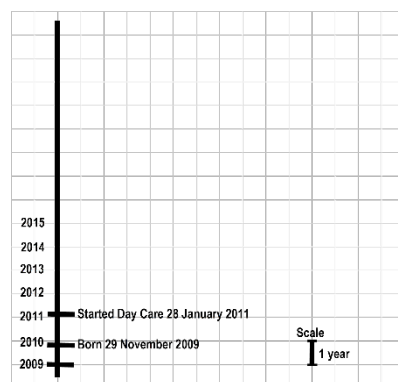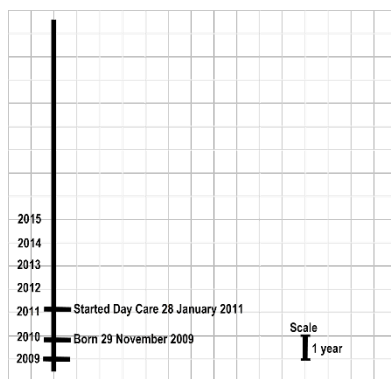
centimetre?

► Is 28 January 2011 almost 1 month after the start of 2011?

► So if 28 January 2011 is almost 1 month after the start of 2011, will 28 January 2011 be about one-twelfth of a centimetre above the start of 2011?

► Let's imagine the child started school on 2 February 2015.

► If the scale on our timeline is 1 year = 1 centimetre where will 2 February 2015 go?

► Where would the start of 2015 go?

► Is the start of 2015, 4 years after the start of 2011?

► If our scale is 1 year = 1 centimetre, does it make sense that the start of 2015 would be 4 centimetres above the start of 2011?

► So we know where the start of 2015 would go, but what about 2 February 2015?

► Are there 12 months in a year?

► So in our scale where 1 year = 1 centimetre, is 1 month one-twelfth of a centimetre?

► Is 2 February 2015 about 1 month after the start of 2015?

► So if 2 February 2015 is almost 1 month after the start of 2015, will 2 February 2015 be about one-twelfth of a centimetre above the start of 2015?

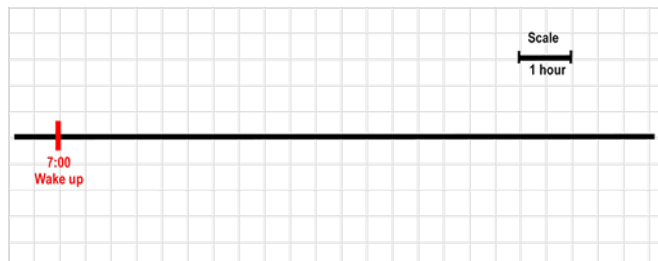► We've investigated placing events on a vertical timeline using scale.

6

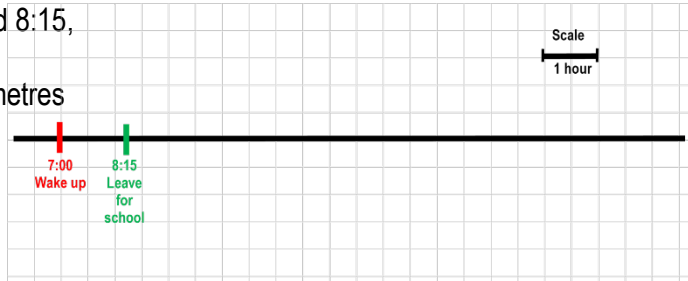Record a horizontal
line on a square
centimetre grid,
for example,

► How else could we plot events on a timeline?

► Could we place events on a horizontal timeline?

► Let's investigate!

► Let's record a horizontal line on a grid.

► We're going to plot some points in the day of a child.

► What scale could we use on our horizontal timeline?

► Could 1 hour be as many centimetres as we want it to be? Is it our scale?

Record, for example,
Scale: 1 hour = 2 centimetres

Scale
1 hour

► Could we use the scale, 1 hour = 2 centimetres?

► I am going to make my scale 1 hour = 2 centimetres.

Record a mark and
7:00 and Woke up
at the left end
of the timeline,
for example,

Scale
1 hour

7:00
Wake up
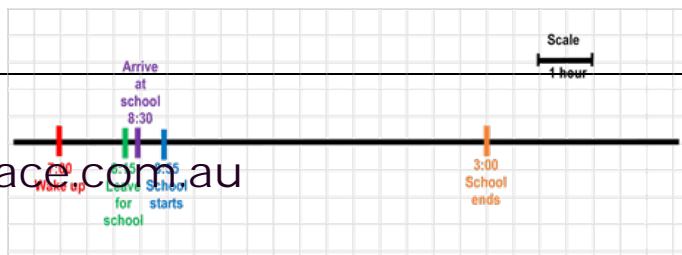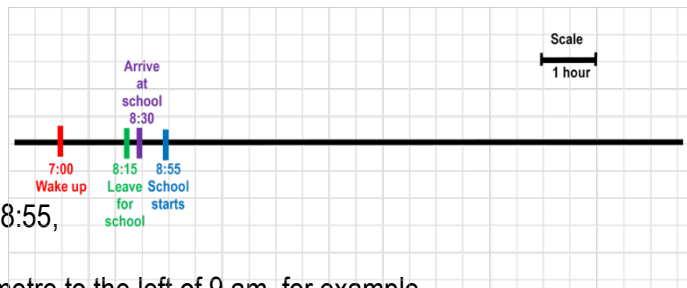
► Let's imagine that the child wakes up at 7am.

► If the child wakes up at 7am, which end of the timeline will 7am go? Why?

► Will 7am go at the left end of the timeline so we can enter later times as we move to the right on the timeline?

► Let's imagine the child leaves for school at 8:15.

7

Record a mark and 8:15,
Leave for school,
2 and a half centimetres
to the right of
7 am, for example,

- ► Where would 8:15 go on our timeline?
- ► Is 8:15 one hour and 15 minutes later than 7 am?
- ► Is 8:15 one and a quarter hours later than 7 am?
- ► If the scale on our timeline is 1 hour = 2 centimetres, will 8 am be 2 centimetres to the right of 7 am?
- ► If the scale on our timeline is 1 hour = 2 centimetres will quarter of an hour be half a centimetre?
- ► Will 8:15 be 2 and a half centimetres to the right of 7 am?

Record a mark and 8:55,
School starts
one-sixth of a centimetre to the left of 9 am, for example,

- ► Let's imagine school starts at 8:55 am.
- ► Where would 8:55 go on our timeline?
- ► Is 8:55, 5 minutes before 9 am?
- ► If the scale on our timeline is 1 hour = 2 centimetres, will 30 minutes be 1 centimetre?
- ► If the scale on our timeline is 1 hour = 2 centimetres, will 5 minutes be five-thirtieths of a centimetre?
- ► Is five-thirtieths equivalent to one-sixth? Is 5, one-sixth of 30?
- ► If the scale on our timeline is 1 hour = 2 centimetres, will 8:55 am be one-sixth of a centimetre to the left of 9 am?

- ► Let's imagine school ends at 3:00 pm.

Record a mark and 3:00, School ends 12 centimetres to the right of 9 am, for example,	► Where would 3 pm go on our timeline? ► Is 3 pm, 6 hours after 9 am? ► If the scale on our timeline is 1 hour = 2 centimetres, will 3 pm be 12 centimetres to the right of 9 am?

Square centimetre grid paper ([back](#)) ([top](#))

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