Insight into Equality

K -6 Elementary Mathematics Professional Learning

EMPL

November, 2015

Alberta Regional Consortia

Insight into Equality

Elementary Mathematics Professional Learning

Learning Guide

Insight into Equality

K – 6 Equality

Image from: http://i.dailymail.co.uk/

Insight into Equality

K – 6 Equality

image from: https://ukpr.files.wordpress.com/2015/09/iceberg.jpg

Insight into Equality

Who's with us today?

Pre-Service Teacher	K – 2 Teacher	3 – 6 Teacher	Admin	Learning Coach	Other

Insight into Equality

Equality Vocabulary

2 + 3 = 5

What is the name of this symbol
What does the symbol mean
Can it mean anything else?

How might students respond to:
"What does the equal sign mean?"

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Webinar Goals

- Big Idea: Equality as a Relationship
- Strategies for Common Misunderstandings
- Planning Suggestions
- Where to go for more information

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Equality as a Relationship

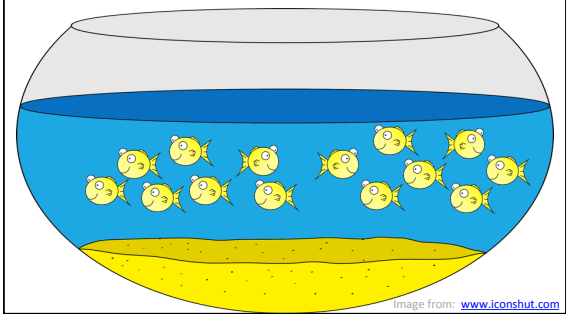

Image from: www.iconshut.com

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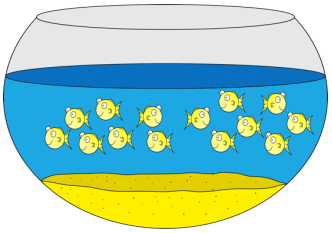
Equality as a Relationship

14 = __ + __ + __

14 = 5 + 2 + 4 + 3

14 = 3 + 4 + 4 + 3



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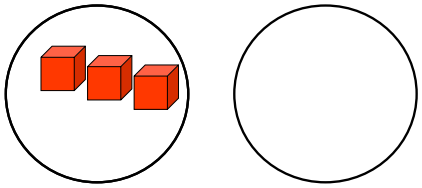

Make a set that has as many as mine

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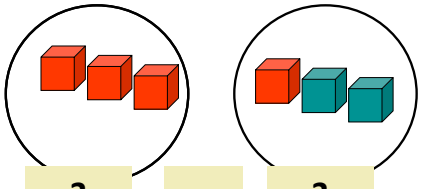

3 **=** **3**

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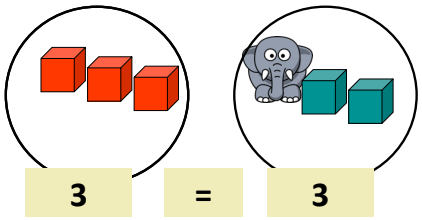

3 = 3

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3 = 3

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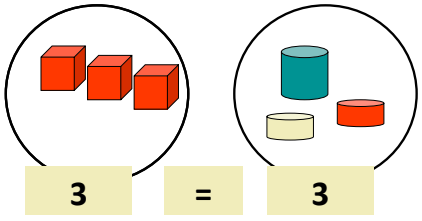
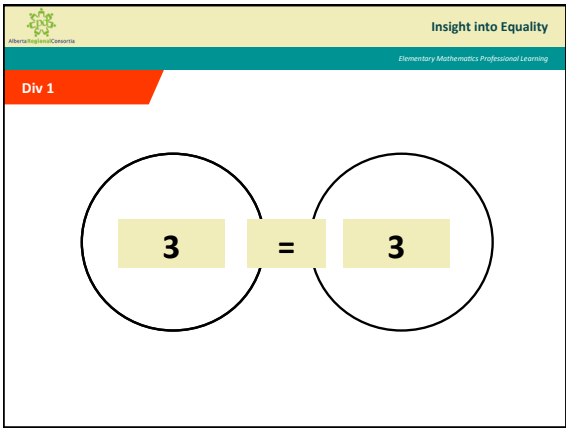
Div 1



3 = 3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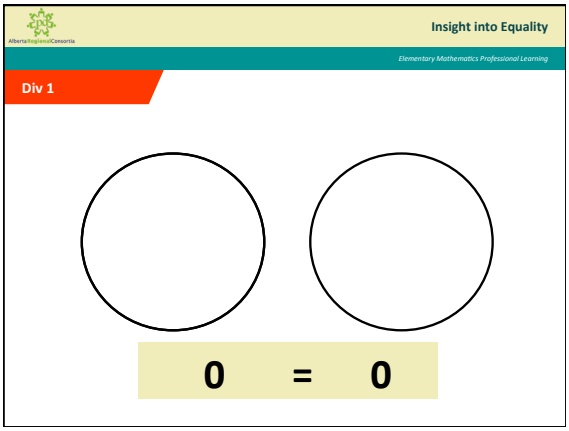
Div 1
3
=
3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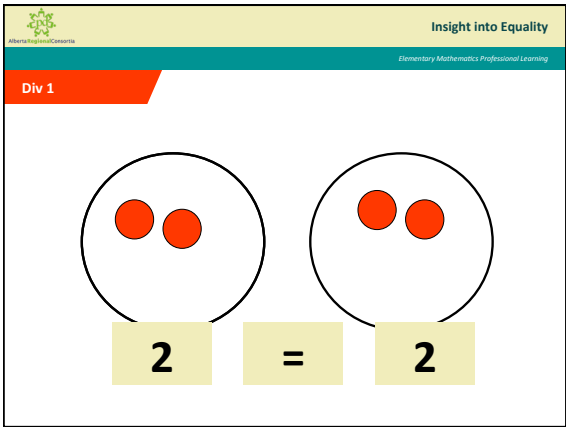
Div 1
0
=
0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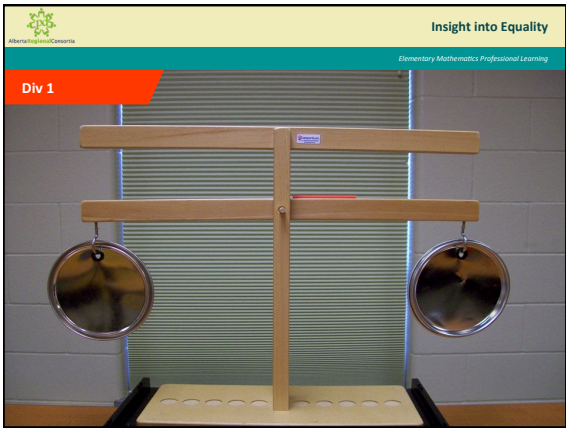
Div 1
2
=
2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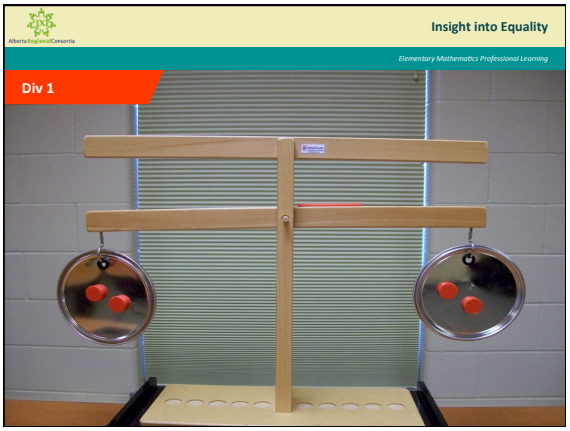
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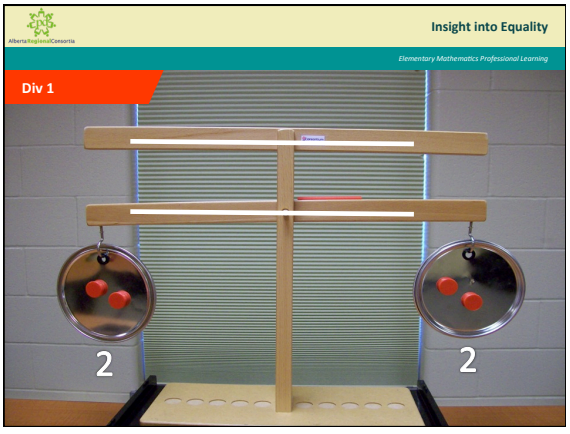
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Div 1
2
2

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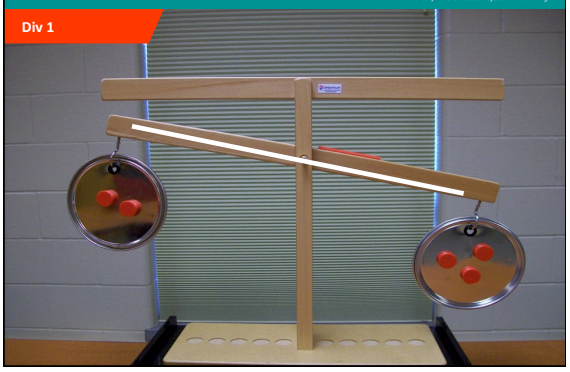
Div 1



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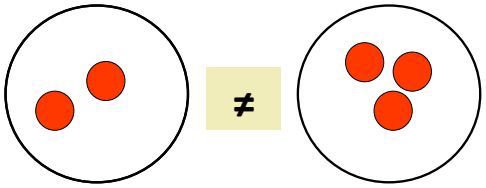

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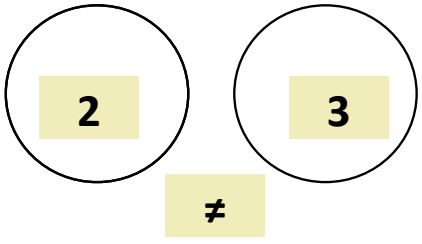

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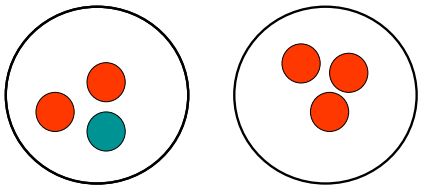

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2 + 1

3

=

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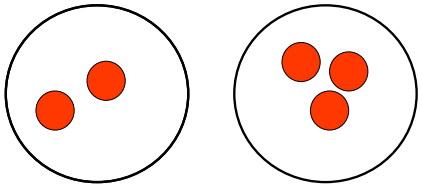
Div 1



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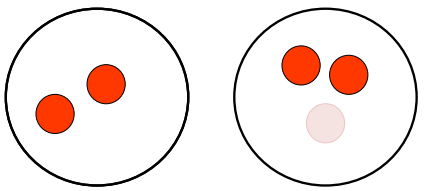
Div 1



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Div 1

2 = 3 - 1

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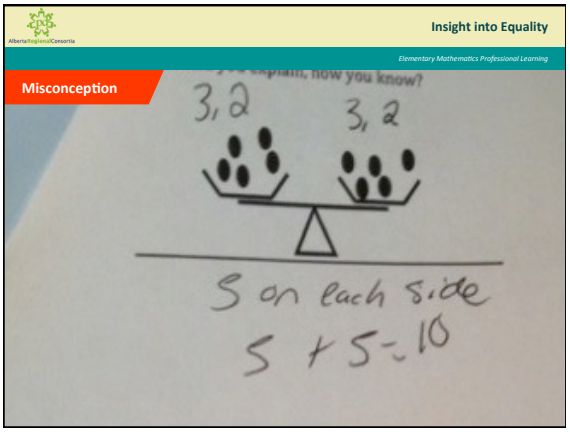
Div 1

2 + ■ = 3 + 2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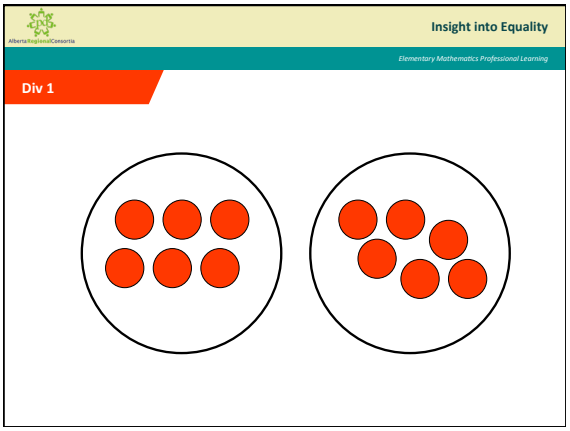
Misconception
3, 2
3, 2
5 on each side
5 + 5 = 10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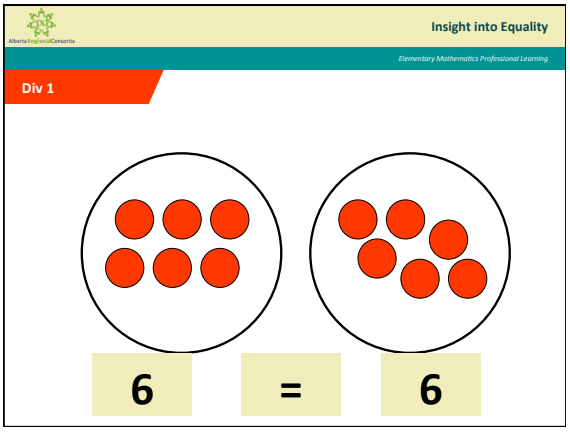
Div 1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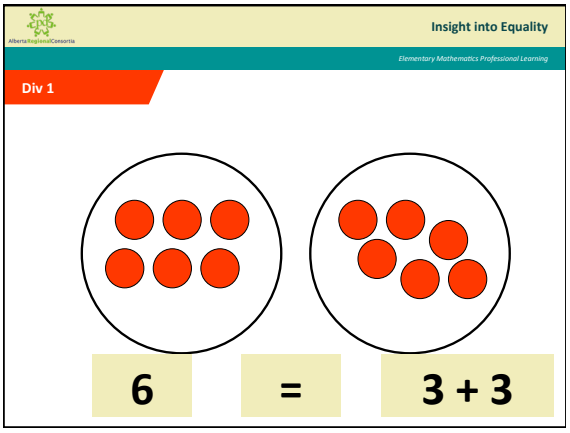
Div 1
6
=
6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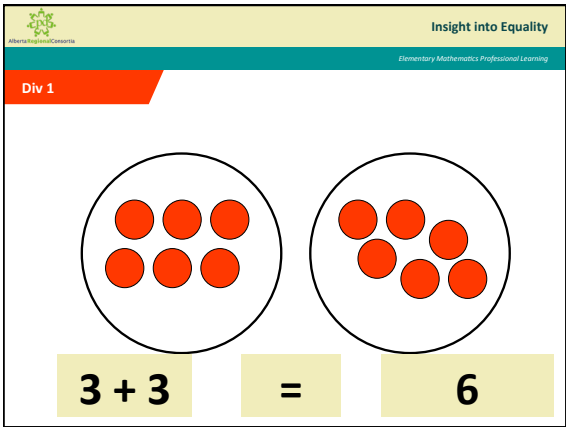
Div 1
6
=
3 + 3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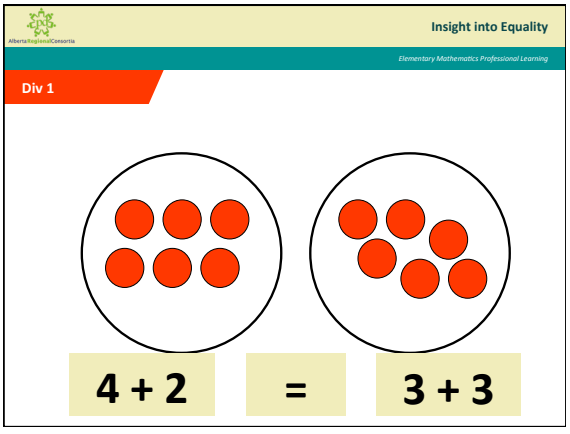
Div 1
3 + 3
=
6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Div 1
4 + 2
=
3 + 3

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Div 1

6 = 3 + 3 **3 + 3 = 6**

4 + 2 = 3 + 3

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Try this with your class...

True or False?

How do you know?

3 + 2 = 5 + 1

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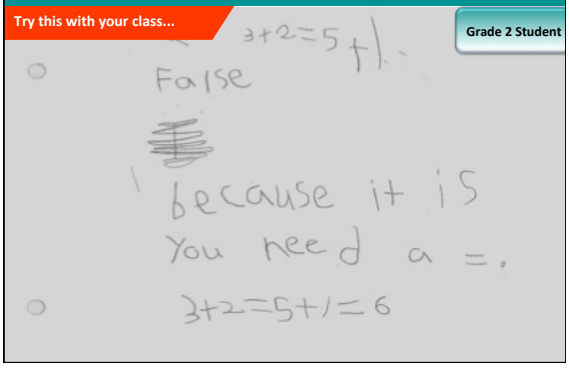
Try this with your class...

Grade 2 Student



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Try this with your class...

The student wrote:

3 + 2 = 5 + 1 = 6

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Don't really do this....

Image by Walter Updegrave, from: http://realdealretirement.com/why-you-shouldnt-obsess-about-a-market-crash/

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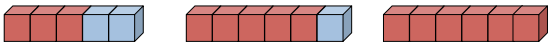
Try this with your class...



3 + 2 = 5 + 1 = 6

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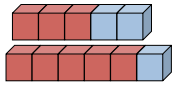
Try this with your class...



3 + 2 = 5 + 1 = 6

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Student Work

3+2= 5+1
False because 3+2=5+1
is 11

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Student Work

3+2= 5+1
False because 3+2=5+1
is 11

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Div 1 & 2

In grade 4 to 6 you might follow up with this one:

True or false, and how do you know?

$7 + 5 = 8 + 4$

or this one $24 + 36 = 25 + ?$

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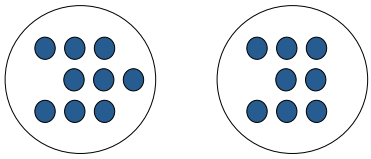
Operations Emerge from Inequality



Are they equal?

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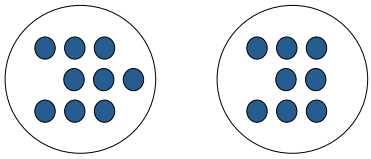
Inequality



9 ≠ 8

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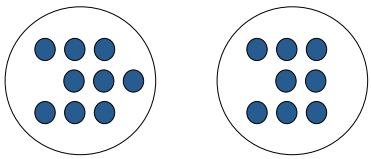
How can you make them equal?



9 ≠ 8

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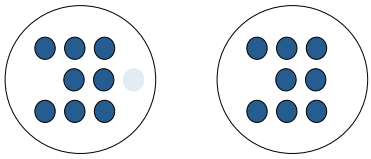

9 - 1 = 8

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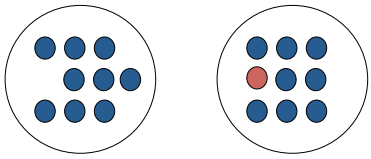
How can you make them equal?



9 = 8 + 1

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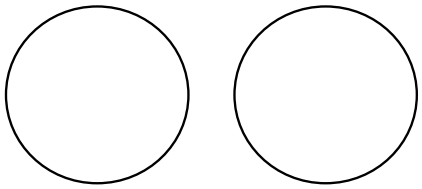
Would this also work? Demonstrate with a diagram.

9 + 2 = 8 + 3



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Would this also work? Demonstrate with a diagram.

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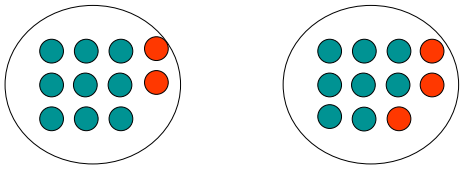

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Div 2 Challenge

How many ways are there to balance the equation?

By grade 6 students should be ready to generalize.

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How do you explain the pattern?

9 + 2 = 8 + 3
9 + 3 = 8 + 4
9 + 4 = 8 + 5
9 + 12 = 8 + ?
9 + 27 = 8 + ?

9 – 1 = 8
9 – 2 = 8 – 1
9 – 3 = 8 – 2
9 – 4 = 8 – 3

14 – 9 = 13 – 8
17 – 9 = 16 – 8
33 – 9 = ? – 8

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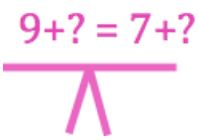
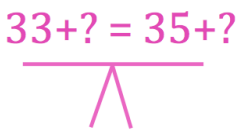
Preserving Equality





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Equality as Relational

Give students frequent opportunities to work with formats like this.....

4 + 5 = __ + 6

5 x 14 = __ x 7

Insight into Equality

Webinar Goals

- Big Idea: Equality as a Relationship
- Strategies for Common Misunderstandings

  3 = 3 24 = 24

  7 = 4 +3 24 = 6 x 4

  2 + 3 = 3 + 2 (or 2 + 3 = 1 + 4) 2 x 12 = 6 x 4
- Planning Suggestions
- Where to go for more information

  http://learning.arpdc.ab.ca/

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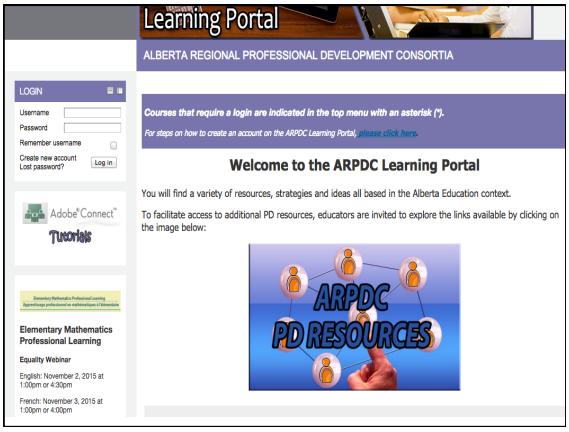
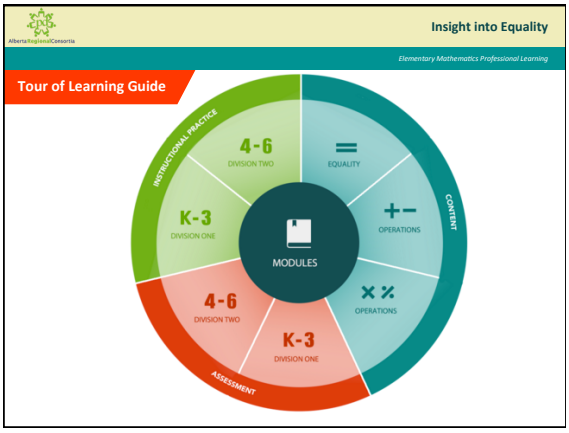
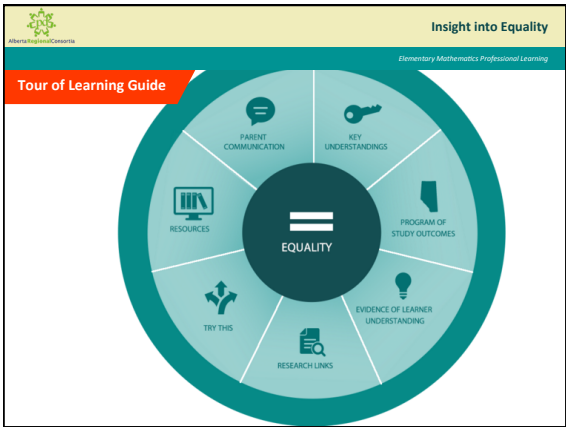
Tour of Learning Guide







Additive and Multiplicative Thinking webinar

January, 2016

Contact info……

NRLC	www.nrlc.net
LN	www. http://www.learning-network.org/
ERLC	www.erlc.ca
CARC	www. carcpd.ab.ca
CRC	www.crcpd.ab.ca
SAPDC	www.sapdc.ca
CPFPP	http://www.cpfpp.ab.ca

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