Above and Below Zero

positive and negative numbers in real life



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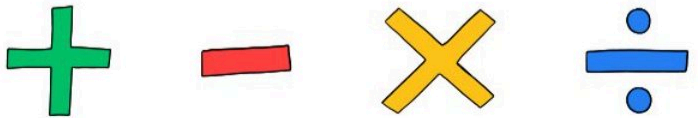
Today we will...

WE ARE LEARNING TO

- Understand opposites around zero
- Use positive and negative numbers in real life

SUCCESS LOOKS LIKE

- ✓ I can write + and - for opposite values
- ✓ I can explain what 0 means each time



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$a^2+b^2=c^2$

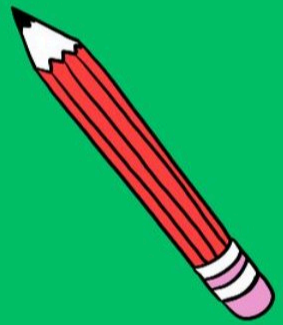
Positive vs Negative

Positive

- Above zero on the number line
- Show up, gain, or having more
- Written with + or with no sign

Negative

- Below zero on the number line
- Show down, loss, or owing more
- Always written with a - sign

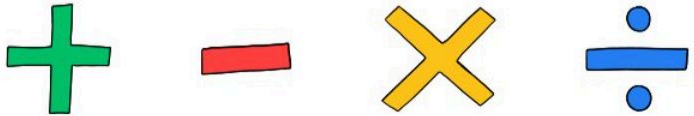


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BIG IDEA

Opposite directions need opposite signs, with zero in the middle.

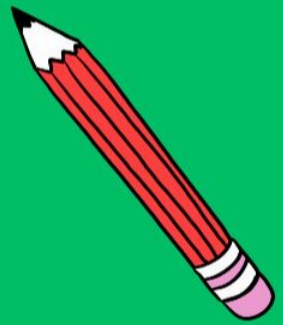




$a^2+b^2=c^2$

Where do opposites matter?

Which opposite pair would you want to track for a day?

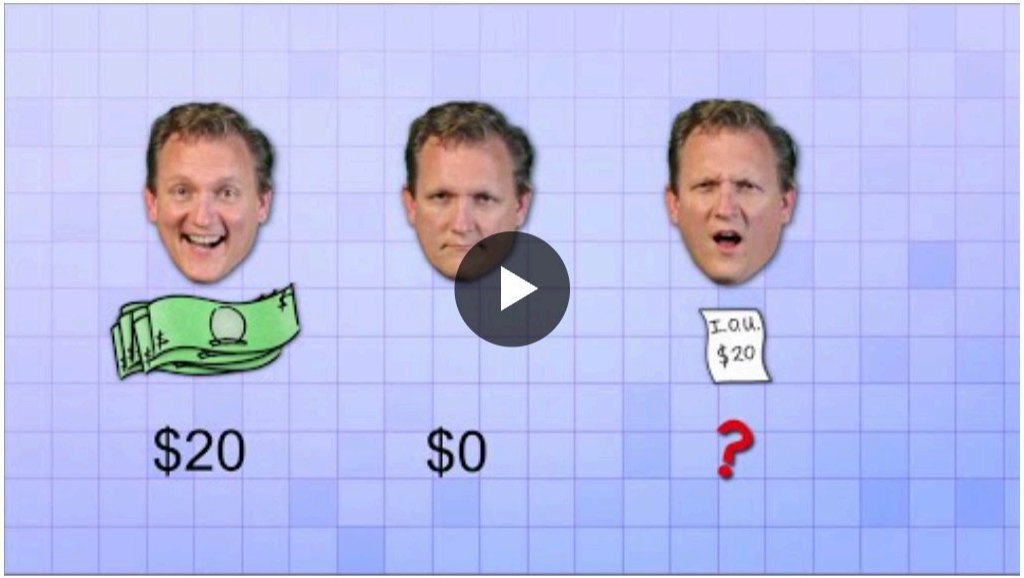


- **A** Temperature above and below zero
- **B** Elevation above and below sea level
- **C** Money earned and money owed
- **D** Positive and negative electric charge

Vote with your hands, then explain why.

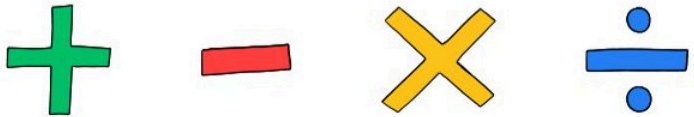
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What do negatives mean?



▶ 0:00 – 5:00

- Where is zero on the line?
- Which side holds negative numbers?
- What opposite pair do you spot?



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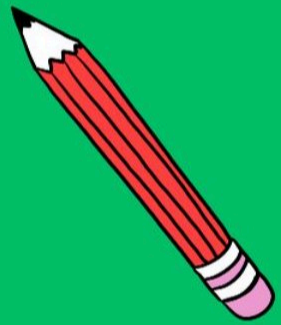
DID YOU KNOW?

People once refused to use negative numbers.

Indian mathematicians wrote the first rules for them around AD 620.

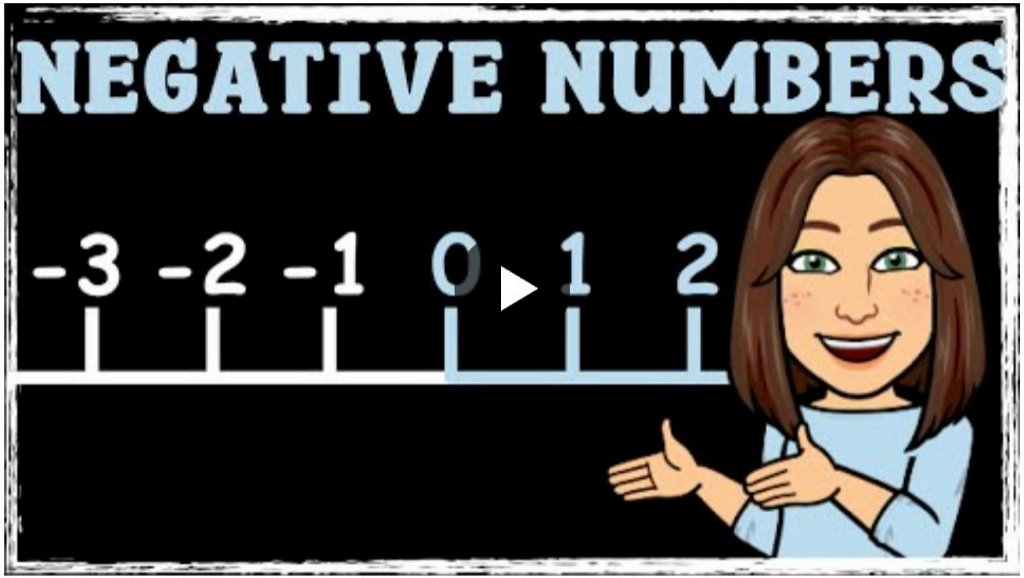


Photo: Ghinzo · Pixabay



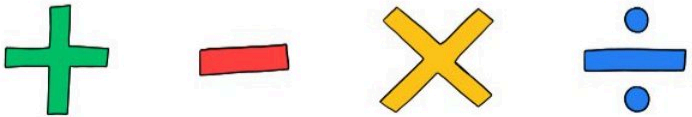
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Negatives in context



▶ 0:00 – 3:11

- What does zero mean each time?
- How do opposites look different?
- Spot money and elevation examples



$a^2+b^2=c^2$

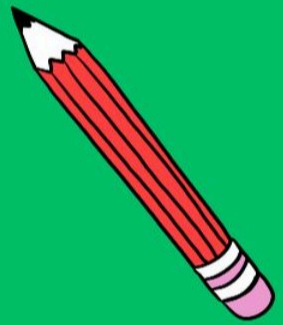
Your task

In pairs, write + or – numbers for each case and explain zero.

1. Write numbers for 8°F below zero and $20 credit
2. Write numbers for 15 feet below sea level and $12 owed
3. Mark each on a mini number line
4. Tell partner what 0 means each time

10 min

In pairs



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What does 0 mean?

- 0°F: zero mark, warmer is +, colder is -
- 0 feet: sea level between up and down
- $0: no cash held and nothing owed
- 0 charge: positives and negatives balance out

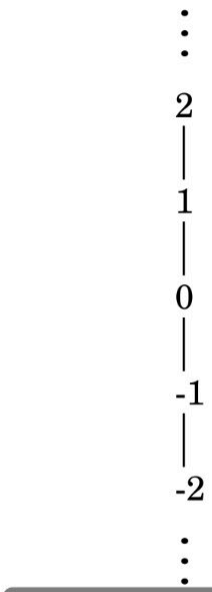
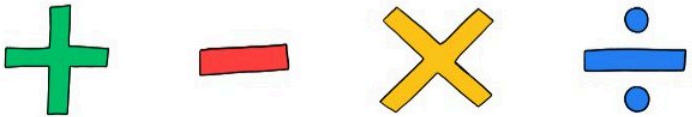


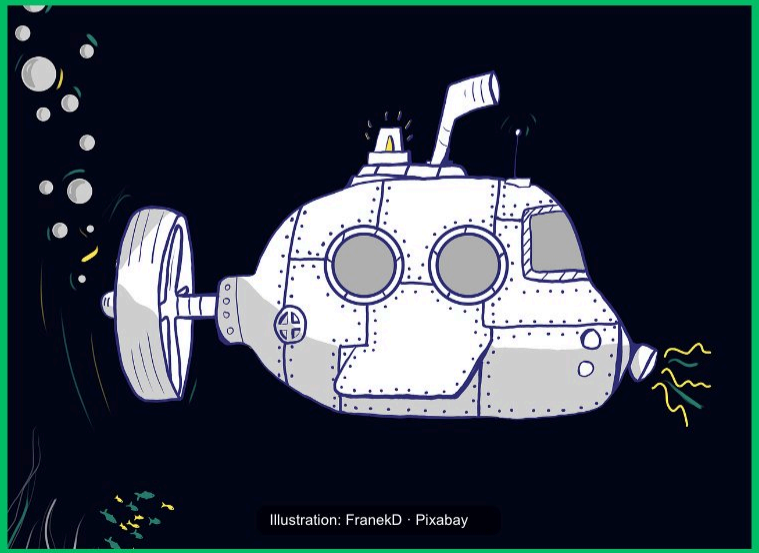
Diagram: CC BY-SA 3.0 · Wikimedia Commons



$a^2+b^2=c^2$

What could this be?

It reads -150 feet. Where is zero and what is below?



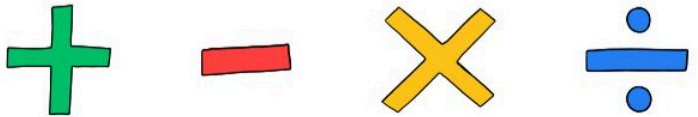
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Exit ticket

1. 8°F below zero is +8 or -8?

2. What does $0 mean for money?

3. One question I still have is...



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