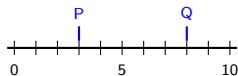


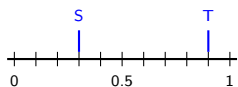
Number Sense: Retrieve and Connects

Retrieve and Connect

Numberline A



Numberline B

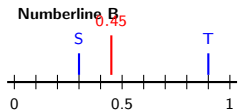
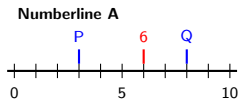


100 10 1 . 0.1 0.01

4	0	7	.	5	2
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1. On numberline A what numbers are marked by P and Q ?
2. On numberline B what numbers are marked by S and T ?
3. Mark 6 on Line A and 0.45 on Line B.
4. Sam says $P = 4$, as it is the 4th mark. What has he done wrong?
5. The chart shows 407.52. What is the 4 worth? And the 5?
6. Work out 407.52×10 and $407.52 \div 10$.
7. A numberline goes 3.6 to 3.7 in 10 equal steps. What is 3 steps along from 3.6?
8. Use 7, 5, 4, 2 and a decimal point to make the largest number less than 100.

Retrieve and Connect

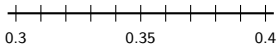


100	10	1	.	0.1	0.01
4	0	7	.	5	2

- On numberline A what numbers are marked by P and Q ? **3 and 8**
- On numberline B what numbers are marked by S and T ? **0.3 and 0.9**
- Mark 6 on Line A and 0.45 on Line B.
- Sam says $P = 4$, as it is the 4th mark. What has he done wrong? **Counted marks, not steps: $P = 3$**
- The chart shows 407.52. What is the 4 worth? And the 5? **400 and 0.5**
- Work out 407.52×10 and $407.52 \div 10$.
4075.2 and 40.752
- A numberline goes 3.6 to 3.7 in 10 equal steps. What is 3 steps along from 3.6? **3.63**
- Use 7, 5, 4, 2 and a decimal point to make the largest number less than 100. **75.42**

Retrieve and Connect: Inequality Symbols & Ordering Decimals

Line A

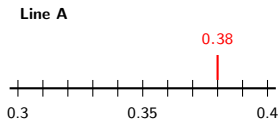


Place value chart

1	.	0.1	0.01	0.001
0	.	4		
0	.	3	5	
0	.	4	0	5

1. Fill in $<$ or $>$:
7 12
30 3
2. In 0.405, what is the 4 worth?
3. On the place value chart, which is bigger, 0.4 or 0.35? Why?
4. Fill in $<$, $>$ or $=$
0.4 0.40,
0.6 0.06
5. Mark 0.38 on Line A. Is it nearer 0.3 or 0.4?
6. Order, smallest first: 0.5, 0.45, 0.405, 0.54
7. True or false: more digits *after* the decimal point means a bigger number? Give an example/counter-example.
8. Alfie says $0.45 > 0.5$ as $45 > 5$. Explain his mistake, then write a decimal between 0.4 and 0.405.

Retrieve and Connect: Inequality Symbols & Ordering Decimals

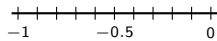
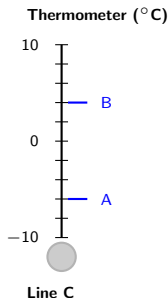


Place value chart

1	.	0.1	0.01	0.001
0	.	4		
0	.	3	5	
0	.	4	0	5

- Fill in $<$ or $>$:
 $7 < 12$
 $30 > 3$
- In 0.405, what is the 4 worth? **4 tenths, 0.4**
- On the place value chart, which is bigger, 0.4 or 0.35? Why? **0.4: 4 tenths is greater than 3 tenths**
- Fill in $<$, $>$ or $=$
 $0.4 = 0.40$,
 $0.6 > 0.06$
- Mark 0.38 on Line A. Is it nearer 0.3 or 0.4? **nearer 0.4**
- Order, smallest first: 0.5, 0.45, 0.405, 0.54 **0.405, 0.45, 0.5, 0.54**
- True or false: more digits *after* the decimal point means a bigger number? Give an example/counter-example. **False: $0.9 > 0.1234$**
- Alfie says $0.45 > 0.5$ as $45 > 5$. Explain his mistake, then write a decimal between 0.4 and 0.405. **0.5 has 5 tenths; e.g.**

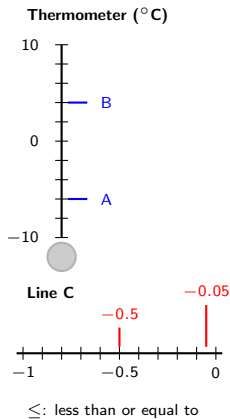
Retrieve and Connect: Ordering Negative Numbers



$\leq$: less than or equal to

1. Which is colder, 4°C or -4°C ?
2. What is each mark on the thermometer worth? Write the temperatures at A and B.
3. Which is colder, -3 or -8 ? Fill in: -3 ? -8
4. Order, smallest first: -2 , 5 , -7 , 0 , -1
5. Mark -0.5 and -0.05 on Line C. Which is larger?
6. Fill in $<$ or $>$:
 -4.5 ? -4.05 ,
 -0.3 ? 0.03
7. (Extension) Order, smallest first:
 -0.08 , 0.7 , -0.8 , -0.75
8. (Challenge) List the integers n :
 $-3 \leq n < 2$. Write a number between -0.5 and -0.4 .

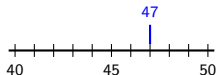
Retrieve and Connect: Ordering Negative Numbers



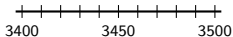
- Which is colder, 4°C or -4°C ?
 -4°C
- What is each mark on the thermometer worth? Write the temperatures at A and B. 2°C per mark; A = -6 , B = -4
- Which is colder, -3 or -8 ? Fill in:
 $-3 > -8$ (-8 is colder)
- Order, smallest first: -2 , 5 , -7 , 0 , -1
(-7 , -2 , -1 , 0 , 5)
- Mark -0.5 and -0.05 on Line C. Which is larger?
 -0.05
- Fill in $<$ or $>$:
 $-4.5 < -4.05$,
 $-0.3 < 0.03$
- (Extension) Order, smallest first:
 -0.08 , 0.7 , -0.8 ,
 -0.75 (-0.8 ,
 -0.75 , -0.08 , 0.7)
- (Challenge) List the integers n :
 $-3 \leq n < 2$. Write a number between -0.5 and -0.4 .
 -3 , -2 , -1 , 0 , 1 ;
e.g. -0.45

Retrieve and Connect: Rounding Integers

Line A

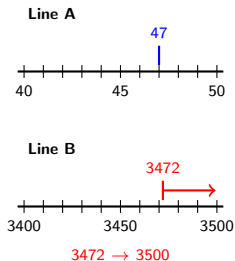


Line B



1. Fill in $<$ or $>$:
 $-6 ? -2$
2. Line A: is 47 nearer 40 or 50? Round it to the nearest 10.
3. Round to the nearest 10: 32, 85
4. Mark 3472 on Line B, then round it to the nearest 100.
5. Round 3472 to the nearest 10; to the nearest 1000.
6. Round 4950 to the nearest 100.
7. Zoe rounds 8449 to the nearest 100:
 $8449 \rightarrow 8450 \rightarrow 8500$. What is her mistake?
8. A number rounded to the nearest 10 is 250. What is the smallest it could be? The largest?

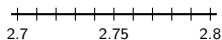
Retrieve and Connect: Rounding Integers



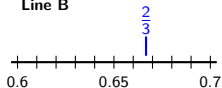
1. Fill in $<$ or $>$:
 $-6 < -2$
2. Line A: is 47 nearer 40 or 50? Round it to the nearest 10.
nearer 50, so 50
3. Round to the nearest 10: 32, 85
(30 and 90)
4. Mark 3472 on Line B, then round it to the nearest 100.
5. Round 3472 to the nearest 10; to the nearest 1000. 3470 and 3000
6. Round 4950 to the nearest 100. 5000
7. Zoe rounds 8449 to the nearest 100: 8449 → 8450 → 8500. What is her mistake? Rounded twice: only the tens digit 4 counts, so 8400
8. A number rounded to the nearest 10 is 250. What is the smallest it could be? The largest? 245 and 254

Retrieve and Connect: Rounding Decimals & Never-Ending Decimals

Line A



Line B



Never-ending decimals

$$\frac{2}{3} = 0.6666 \dots = 0.\dot{6}$$

$$\frac{1}{7} = 0.142857142857 \dots$$

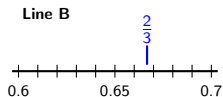
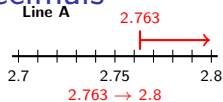
$$\pi = 3.14159265 \dots$$

$$\sqrt{2} = 1.41421356 \dots$$

$$0.1010010001 \dots$$

1. Round 4738 to the nearest 100.
2. Round to the nearest whole number: 4.6, 12.348
3. Mark 2.763 on Line A. Round it to 1 decimal place (d.p.).
4. Round to 1 d.p.: 4.62, 0.95. Why is 0.95 not 1?
5. Round 12.348 to 2 d.p., then to 1 d.p. Why not 12.4?
6. Line B shows $\frac{2}{3} = 0.\dot{6}$. Round it to 1 d.p. and 2 d.p.
7. (Extension) Write $\frac{1}{3}$ in dot notation, then round $\frac{1}{7}$ to 3 d.p.
8. (Challenge) Which listed decimals never settle into a repeating block? Can one still be a fraction?

Retrieve and Connect: Rounding Decimals & Never-Ending Decimals



Never-ending decimals

$$\frac{2}{3} = 0.6666... = 0.\dot{6}$$

$$\frac{1}{7} = 0.142857142857...$$

$$\pi = 3.14159265...$$

$$\sqrt{2} = 1.41421356...$$

$$0.1010010001...$$

1. Round 4738 to the nearest 100. **4700**
2. Round to the nearest whole number: 4.6, 12.348 (**5 and 12**)
3. Mark 2.763 on Line A. Round it to 1 decimal place (d.p.).
4. Round to 1 d.p.: 4.62, 0.95. Why is 0.95 not 1? **4.6, 1.0 — 1 d.p. needs one decimal digit**
5. Round 12.348 to 2 d.p., then to 1 d.p. Why not 12.4? **12.35, 12.3 —**
6. Line B shows $\frac{2}{3} = 0.\dot{6}$. Round it to 1 d.p. and 2 d.p. **0.7 and 0.67**
7. (Extension) Write $\frac{1}{3}$ in dot notation, then round $\frac{1}{7}$ to 3 d.p. **0. $\dot{3}$ and 0.143**
8. (Challenge) Which listed decimals never settle into a repeating block? Can one still be a fraction? π , $\sqrt{2}$, **0.101001...; yes: $0.\dot{3} = \frac{1}{3}$**