How Many Clips Long?

Teacher		**Class**	Grade 1
Subject	Math	**Topic**	Measuring length
Date		**Room**	
Lesson length	60 minutes	**Country**	United States

Students learn that length is how many same-size units span an object. They measure paper strips with clips and put them in order.

Curriculum links

- Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. [1]
- Order three objects by length; compare the lengths of two objects indirectly by using a third object. [1]

Learning objectives

- Students will measure strips using same-size paper clips laid end to end.
- Students will express length as whole number of clips with no gaps or overlaps.
- Students will order three strips from shortest to longest using counts.

Success criteria

- I can lay same-size clips end to end.
- I can count clips to say how long a strip is.
- I can put three strips in order shortest to longest.

What students already know

Hold up a pencil and a book for about 2 minutes: Which is longer? How could we prove it without a ruler? Listen for longer/shorter and using a small thing to check.

Key words

length	how far it is from one end of something to the other [7]
unit	one small same-size thing we use over and over to measure [1]
end to end	with tips just touching in a straight line [4]
gap	an empty space left between two things [1]
overlap	when one thing sits on part of another thing [1]

Materials

- same-size large paper clips
- 3 paper strips of different lengths per pair
- short support strips that measure 3 to 5 clips with center line
- a few small paper clips for stretch comparison
- Slides 1-12 with projector and sound

Before the lesson

- Make 3 different-length paper strips per pair, plus short 3- to 5-clip strips with a center line drawn down the middle
- Count out cups of same-size large paper clips and keep a few small clips apart for stretch

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- Load Slides 1-12 and test Video clip 1 (0:00-2:37) and Video clip 2 (0:00-1:51)
- Clear table space so pairs can lay clips in a straight line

Lesson outline

0–5 min **Starter** 5 min · Whole class

Hook interest and recall longer and shorter to set up the measuring goal.

YOU DO

1. Show Slide 1 and read the title together.
2. Say the hook and hold up 3 paper strips of clearly different lengths.
3. Ask pairs to point to which strip looks longest and how to prove it.
4. State the goal: find which paper strip is longer by measuring with same-size paper clips.

STUDENTS DO

1. Look at the strips and title on Slide 1.
2. Turn and talk with a partner about which strip looks longest.
3. Listen to the goal for measuring with clips.

Say: Which train is longest? Your paper clips will tell you! Look at my three strips. Just looking can trick us, so we will measure with little clips laid like train cars.

Ask: Which strip looks longest? (The middle/long one looks longest, but we need to measure to prove it.) · How could we prove it with no ruler? (Use lots of the same small thing laid along it and count.)

Check understanding: Ask all to point to the strip they think is longest; if split, say measuring will decide and move on.

Support: Use two strips that are very different in length so longest is easy to see. **Stretch:** Ask students to guess how many clips each strip will take before we measure.

Use: Slides 1-2

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5–20 min **Teaching** 15 min · Whole class

Teach that length is counted as same-size units laid end to end with no gaps or overlaps.

YOU DO

1. Show Slides 3-4 and teach the 4 steps: pick one small unit, lay end to end, no gaps or overlaps, count.
2. Show Slide 5 mystery and let students guess what the little tails are.
3. Play Video clip 1 and have students count aloud as ends touch.
4. Model measuring a book with 5 same-size large clips, laying multiple copies of the shorter unit end to end [1].

STUDENTS DO

1. Chant the 4 steps and touch fingers for no gaps and no piles.
2. Watch the video and count aloud with the teacher.
3. Watch the book model and say with teacher: The book is 5 clips long.

Say: Pick just one kind of small unit. All the units must be the same size. Lay them end to end so the ends just touch. Leave no spaces and make no piles, then count to get how long it is.

Worked example: The book is 5 clips long. 1: Start first clip exactly at the end of the book. 2: Lay clip 2 so its end just touches clip 1, with no gap or pile. 3: Keep adding same-size clips to the other end: 3, 4, 5. 4: Count 5, so the length measurement is the number of same-size units that span it with no gaps or overlaps [1]. Building up length with equal-sized units like this is called iterating [2].

Ask: Where must the first clip start and the last clip stop? (Exactly at one end and exactly at the other end of the book.) · What must be true about all the clips? (All clips must be the same size, laid end to end with no gaps or overlaps [1].) · If we count 5 clips, how long is the book? (5 clips long, because the count is the length.)

Check understanding: Hold up fingers to show the book count; if many do not show 5, remodel clips 4 and 5 slowly and recount together.

Support: Count slowly while touching each clip and keep the row taped still so it does not move. **Stretch:** Ask what would happen to the count if we used tiny clips instead of large clips.

Use: Slides 3-6, Video clip 1 (0:00–2:37)

20–30 min **Guided practice** 10 min · Whole class

Practice seeing same-size units and saying the count together.

YOU DO

1. Show Slide 7 cards and check that clips, cubes and crayons are all same size.
2. Play Video clip 2 and pause when a gap shows.
3. Fix the gap together by sliding clips so ends just touch.
4. Count the row together and say the length as a whole number of units.

STUDENTS DO

1. Call out same or not same for each card on Slide 7.
2. Shout gap when they see a space in the video and show closing it with fingers.
3. Count aloud 1, 2, 3, 4 and say the strip is 4 clips long.

Say: Good measurers use same-size units every time. Watch the gaps go away. Ends must just touch. Now we say the number together to tell the length.

Worked example: Paper strip row: clips laid 1, 2, 3, 4 with ends touching and no gaps or overlaps [1]. Count: 1, 2, 3, 4. The strip is 4 clips long. If there was a space between clip 2 and 3, the count would be wrong, so we close it and recount.

Ask: Are these clips okay to use together? (Yes if all clips are the same size; no if sizes are mixed.) · Do the ends touch with no gaps or piles? (Yes, ends just touch; if not, we fix it before counting.)

Check understanding: Use thumbs up for touch, thumbs down for gap or pile on three quick examples; reteach with blocks if split.

Support: Let students touch each join with a finger to feel if ends touch. **Stretch:** Ask students to spot both a gap and a pile and tell how to fix each.

Use: Slides 7-8, Video clip 2 (0:00–1:51)

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30–50 min **Main activity** 20 min · Pairs

Measure three strips with clips and order them shortest to longest.

YOU DO

1. Show Slide 9 steps and Slide 10 check cards: Same, Touch, No gaps.
2. Hand each pair 3 strips and a cup of same-size large clips and demo the first strip.
3. Send pairs to take turns laying clips end to end along a strip and saying the count each time they add a clip.
4. Circulate to check starts at the end, no gaps or overlaps, and help pairs order strips 4, 6, 8 shortest to longest.

STUDENTS DO

1. Take turns laying paper clips end to end along each strip and counting aloud.
2. Say each length, like The strip is 6 clips long.
3. Place strips in order from shortest to longest and point to counts to prove it.

Say: In pairs, pick a strip. Start at one end. Lay same-size clips end to end with no gaps or piles. Count the clips. Write or say the number, then measure the next strip and put them in order.

Worked example: Pair measures: short strip takes 4 clips, middle strip takes 6 clips, long strip takes 8 clips. They lay the three strips in order and point to counts to prove it: 4, 6, 8, shortest to longest. The length of each is the number of same-size units that span it with no gaps or overlaps [1].

Ask: How many clips long is this strip, and how do you know? (For example 6 clips long, because 6 same-size clips span it with no gaps or overlaps.) · Which strip is longest? How do the numbers prove it? (The one with the biggest count, like 8 is longer than 6 and 4.)

Check understanding: Visit each pair to see rows touching end to end and hear counts; if gaps appear, have students slide clips together and recount before ordering.

Support: Use shorter strips that measure 3 to 5 clips, and use a line drawn down the middle to keep clips straight. **Stretch:** Mix in a strip that is the same number of clips but uses small clips, and ask why the numbers change when the unit size changes.

Use: Slides 9-10

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50–60 min **Plenary** 10 min · Whole class

Explain why no gaps or piles matter and check the success criteria.

YOU DO

1. Show Slide 11 question and give 1 minute think, pair, share on why no gaps or piles.
2. Take 2-3 pair ideas and rebuild a wrong row with a gap and a pile correctly.
3. Run Slide 12 quick quiz aloud and have all answer together.
4. Link back to goal: we found longest strips by counting same-size clips.

STUDENTS DO

1. Think, pair, share why no gaps or piles, pointing to gaps and piles.
2. Answer quiz together and hold up fingers for 5 clips.
3. Say what they can do now against the success lines.

Say: Gaps make us miss length. Piles count extra length. We need ends just touching. Then the count tells the true length. Tell your partner why we leave no gaps or piles.

Worked example: Wrong row has a finger-wide gap after clip 2 and clip 4 sits on clip 3. Fix: slide clip 3 to close the gap, move clip 4 so ends just touch. Recount 1 to 5. The book is 5 clips long, so the answer to How long is it is 5 clips.

Ask: Why no gaps or piles? (Because the length is the number of units that span it with no gaps or overlaps [1]; gaps and piles give a wrong count.) · The book is 5 clips long. How long is it? (5 clips.)

Check understanding: Use Slide 12 quiz: Do ends touch? Yes. Can we leave gaps? No. If many miss, show gap versus touch once more and revote.

Support: Let students touch the gap with a finger and slide blocks together to close it before counting.
Stretch: Ask students to make their own wrong example on purpose, then have a partner find and fix it.

Use: Slides 11-12

Common mistakes

Mistake	How to spot it	How to fix it
Leaving spaces between units	Row looks broken or finger fits between clips	Slide units together so ends just touch, then recount the whole number that spans it with no gaps or overlaps [1].
Piling one unit over the next	Clip sits on top of last clip so row looks shorter	Move it so ends just touch with no overlap, then count again from 1 [1].
Mixing different-size units in one measure	Counts differ for same strip or small and large clips mixed	Start again using only same-size units, because length is the number of same-size units [1].

Support

- Use shorter strips that measure 3 to 5 clips, and use a line drawn down the middle to keep clips straight.
- Tape the first clip at the end and count aloud while touching each clip.

Stretch

- Mix in a strip that is the same number of clips but uses small clips, and ask why the numbers change when the unit size changes.
- Measure a longer desk that takes more than 10 clips and write The desk is __ clips long.

For the LSE or teaching assistant

Stay with the measuring pairs: help start first clip exactly at the end, close gaps, keep same-size clips in line, count aloud, and order 4, 6, 8.

Check for understanding

Question	Answer
A strip is spanned by 6 same-size clips with no gaps. How long is it?	6 clips long.
Can we leave a gap between clips when we measure?	No.
Three strips measure 4, 7 and 9 clips. Which is longest?	The 9-clip strip.

Homework

Measure one book at home with same-size spoons laid end to end and say how many long it is.

Sources

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