Count every triangle: a 10-minute discussion

Use a clear diagram and a six-item list to compare methods and check that no triangle is missed or counted twice.

10 minutes | 1-12 learners; pairs or a small group

Who this is for

Learners able to recognize a triangle and follow a labelled diagram. Learners can recognize three straight sides and count small groups. The adult explains the A/B/C and 1/2 labels.

Prepare

One participant sheet per learner and pencils. Page 3 includes the same diagram as thinking card HD-T-triangles-01. Keep pages 1-2 with the adult.

1. Think quietly | 2 minutes

Show the printed diagram. Count triangles made from drawn lines only. Overlaps count, and different positions count separately. Ask for a first answer without racing.

2. Compare two methods | 3 minutes

Invite a traced triangle and a reason for counting it. Explain that labels A, B and C name rays from the top; 1 and 2 name horizontal bases. Avoid judging a learner by a first guess.

3. List and check | 3 minutes

Start with base 1. List pairs AB, AC and BC. Repeat with base 2. Trace each of the six listed triangles and check for duplicates.

4. Change one condition | 2 minutes

Ask what one extra horizontal line would add. Sketch it between the bases, list its three ray pairs and explain the new total.

Questions, options and checking

What this practises

Count systematically, explain what counts as different, and check a complete list

Questions to ask

What makes this a triangle? / How does your list show that nothing was counted twice? / Why must each triangle use one horizontal base?

Offer more support

Trace one triangle at a time with a finger or removable overlay. Start with the AB pair and compare its two bases. Let a partner read labels aloud; do not use a speed challenge.

Extend the activity

Draw one more horizontal base and explain which three new triangles it creates. This changes a condition; it is not a new randomly generated puzzle.

Answers and checking

Base 1: AB1, AC1, BC1. Base 2: AB2, AC2, BC2. Total 6. All rays meet at the top, so any triangle uses two rays and one horizontal base. Two horizontal bases cannot meet to form a triangle. One extra base adds 3 triangles, for a new total of 9.

Limits and care

Different positions count even when shapes look alike. Labels are outside the diagram and are not sides. Our teaching adaptation has not been tested for learning gains and is not an IQ test.

Open the guide and tool

https://handydaytools.com/blog/count-shapes/

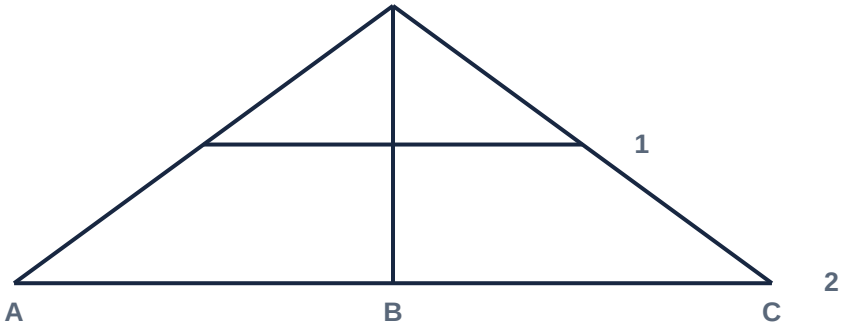
https://handydaytools.com/thinking-cards/

Print page 3 for participants. Keep pages 1-2 with the adult. Download the separate sample game or puzzle from the guide when listed.

Free for personal, classroom and free community activities. Please do not resell or rehost our original files. Full terms: handydaytools.com/use/

A list that checks my count

Name (optional): _____ Date: _____



My first answer and one triangle I can trace:

My list for base 1:

My list for base 2:

My checked total and how I avoided duplicates:

One extra horizontal base would add: