

Paper tower challenge

Plan, build and test a free-standing tower with your house team.



NAME _____ HOUSE _____ DATE _____

LEARNING GOAL

Plan, build and test a strong structure, then use results to improve it.

SUCCESS CRITERIA

- ☐ I can plan a tower and label my ideas.
- ☐ I can measure and record height in cm.
- ☐ I can explain what makes a tower strong.

1 The challenge and the rules

BRIEF

R1 MATERIALS 20 sheets of A4 paper and 1 m of masking tape. Nothing else goes in the tower.	R2 TIME 20 minutes to build the tallest free-standing tower you can.	R3 STAND ALONE It stands on its own, with no hands touching it, for 10 seconds .	MEASURING <i>table to top (in cm)</i>
R4 HEIGHT Measured in cm from the table to the highest point of the tower.	R5 NOT ALLOWED No taping or fixing the tower to the table, the walls or anything else.	R6 SAFETY Use scissors with care. Keep the area clear. Never stand on chairs or tables.	

2 Team roles

one job each

JOB 1 Builder Leads the build and makes strong joins. NAME _____	JOB 2 Materials manager Hands out paper and tape. Keeps the tally. NAME _____
JOB 3 Timekeeper Calls out the time every 5 minutes. NAME _____	JOB 4 Measurer Measures the height in cm and records it. NAME _____

3 Materials tally

Tick a box for each **sheet** you use.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

Shade a box for each **10 cm** of tape.

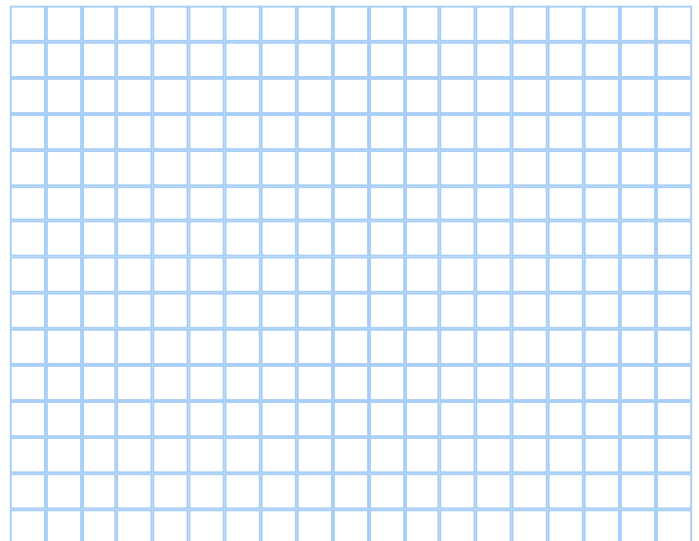
10	20	30	40	50	60	70	80	90	100
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4 Plan your tower

5 min

Sketch it from the front. Label tubes, triangles and joins.

VIEW A: FRONT (5 MM GRID)



OUR TARGET HEIGHT cm



Test it, improve it, record it

5 Test, improve and retest

TEST LOG

TEST	HEIGHT	STOOD 10 S?	WHAT HAPPENED? WHAT WILL WE CHANGE?
A Trial test during the build	cm	Yes / No	
B Judged test at 20 minutes	cm	Yes / No	

CHANGE IN HEIGHT

$$B - A = \text{ } \text{cm}$$

GO FURTHER: HEIGHT PER SHEET

$$B \div \text{ sheets used} = \text{ } \text{cm}$$

6 House results

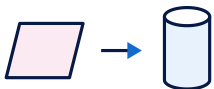
judged test

HOUSE	HEIGHT	STOOD 10 S?	RANK	POINTS
A ASH	cm	Yes / No		
B BIRCH	cm	Yes / No		
O OAK	cm	Yes / No		
R ROWAN	cm	Yes / No		

Points: 1st = 4, 2nd = 3, 3rd = 2, 4th = 1. A tower that does not stand for 10 seconds scores 0.

7 What made the strongest towers?

3 marks



1 ROLLED TUBES

A rolled sheet is much stiffer than a flat one.



2 TRIANGLES

A square can lean over. A triangle keeps its shape.



3 WIDE BASE

A wide base makes a tower harder to tip over.

Which idea helped the tallest tower most? Explain how, using your results.
