🌲 Biomimicry Worksheet: PIONEERS & PATRIOTS

Pine Branches & Roof Pitch 🏠

Challenge in Nature:

Pine trees grow strong branches at diagonal angles so that:

✓ Heavy snow slides off ❄️

✓ Wind load is distributed evenly 💨

✓ The trunk doesn't break 🌳

✓ The branch supports weight without collapsing 💪

Human Problem:

Roofs can fail from heavy snow loads because:

❌ Snow builds up and stays

❌ Flat surfaces trap weight

❌ Poor angles make water and snow sit too long

Biomimicry Solution:

Design a roof with a diagonal pitch (like pine branches) so snow slides off naturally! 🏠🌲

Success Criteria:

✓ Roof sheds snow effectively

✓ Structure stays strong

✓ Uses materials efficiently

✓ Meets building codes

Constraints:

📌 Materials available

📌 Time to build

📌 Cost of production 💰

📌 Safety codes

Fill in the Blanks!

1. The problem we are trying to solve is: _____

2. The natural design we copied is: _____

3. Our roof pitch angle will be: _____

4. One material we will use is: _____

5. One constraint we must think about is: _____

Bonus: Draw your roof designs on this page!