

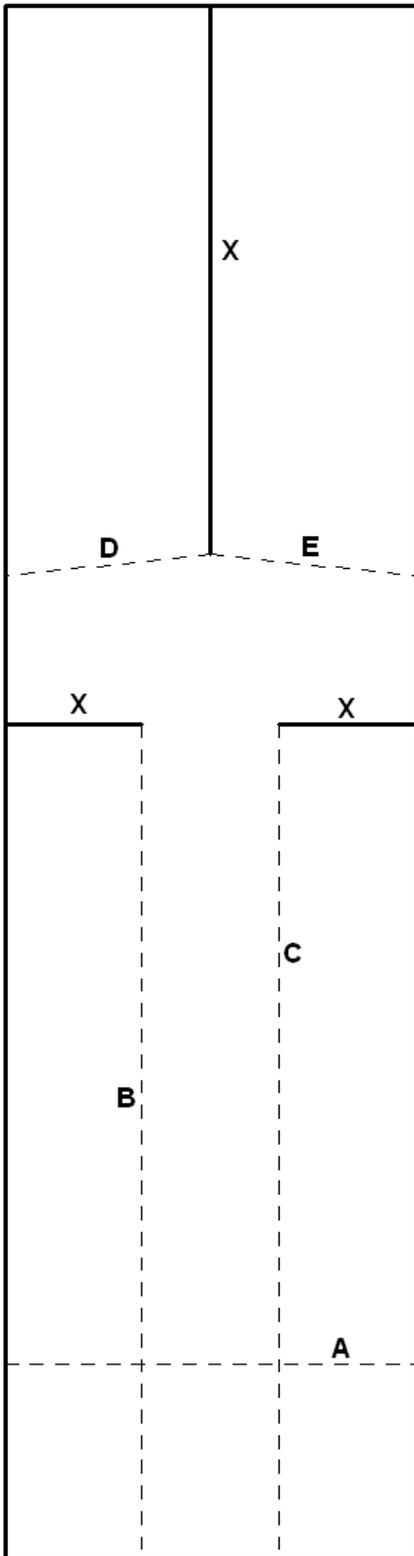
## **Paper Helicopter Lesson** (Elementary School Level)

By Keith Rawlinson From Eclecticsite.com's "Anything Goes" page

**Materials:** Paper helicopter patterns, scissors, paperclips, pencils or pens.

### **Procedure:**

1. Announce that we are going to make/engineer something from simple material. (Hand out patterns without instructions).
2. Anyone know what this is? (Take guesses).
3. If I told you to cut or fold one of the lines, what would you need to know? (Which line).
4. What are some ways we can show which line? (Take guesses like color, type, numbers, letters, etc.)
5. Let's use letters. (Have everyone label their pattern as shown).
6. Notice there are solid lines and dashed lines? Why? (Take guesses).
7. First we're going to cut along the lines we marked with an X. Are these the solid or dashed lines? (Solid)
8. If we are going to cut along the solid lines, what might we do with the dashed lines? (Fold).
9. Everyone cut along the lines marked X.
10. Fold line A then straighten the line back out.
11. Fold lines B and C back so the flaps overlap.
12. Fold line D toward the back. Notice line D is angled. (Ask what "angled" means)
13. Fold line E toward the back, then fold line E back to the front. Notice line E is also angled.
14. Fold line A back up to form a little hook at the bottom.
15. Everyone throw your paper helicopter into the air and see how it does.
16. How did yours fly? (Take responses).
17. Can anyone think of any things we could try that might make it fly better? (Weight at the bottom)
18. What simple item could we use to easily add weight to the bottom? (Paperclip).
19. Pass out paperclips and have everyone clip the little hook down flat.
20. Try them out again. (Point out how much better they fly).
21. Remember lines D and E were angled. Why do think that is? (Angle the blades for better spin).

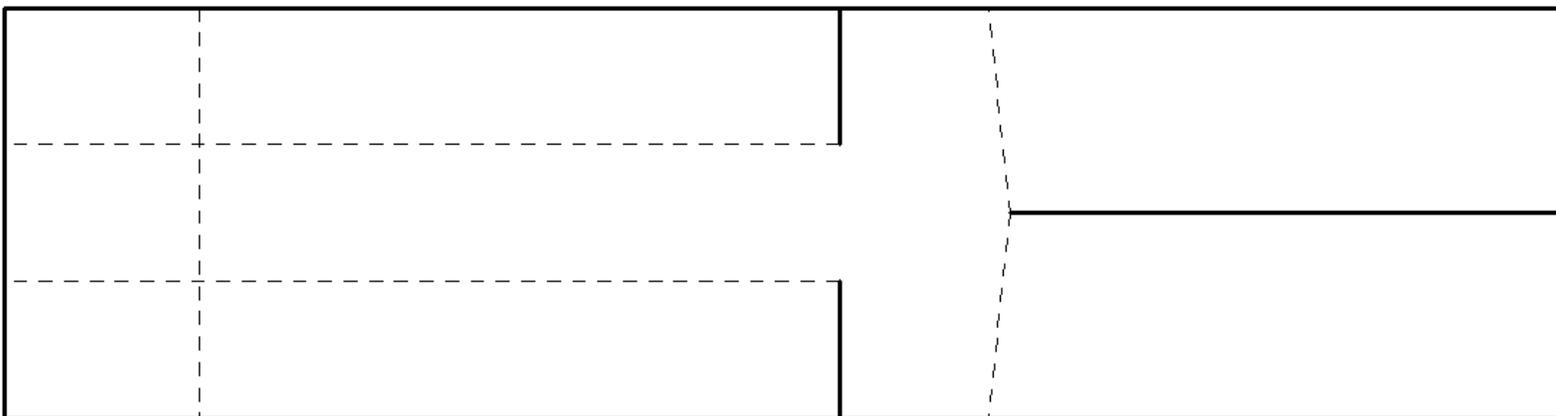
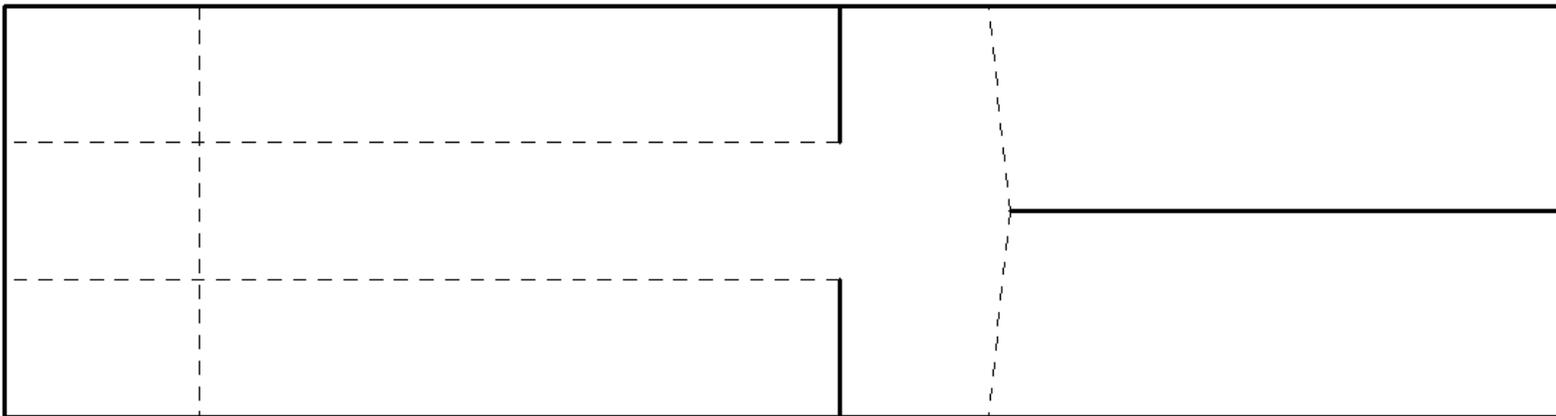
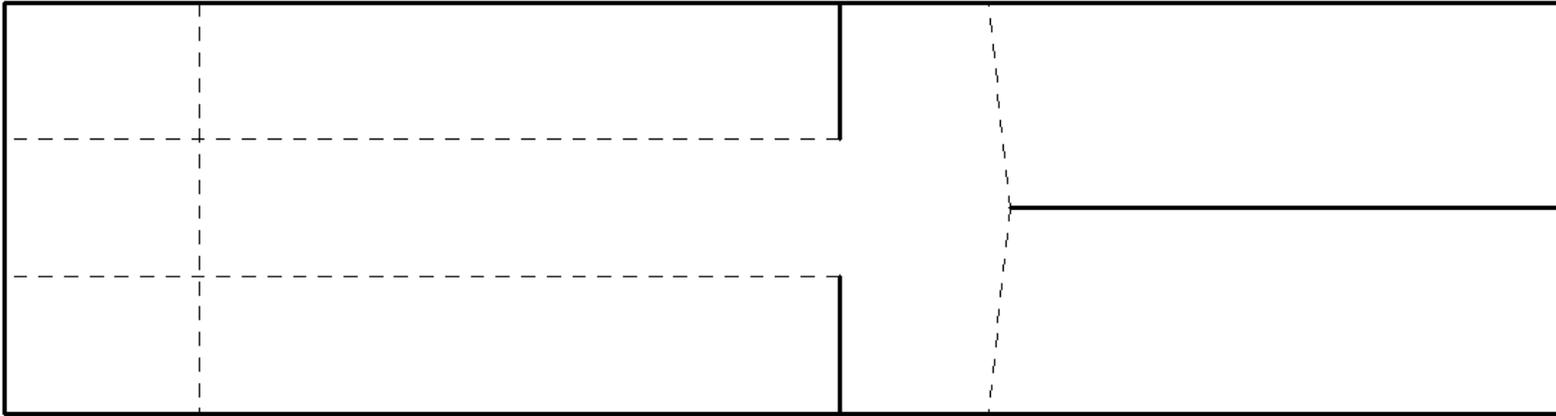
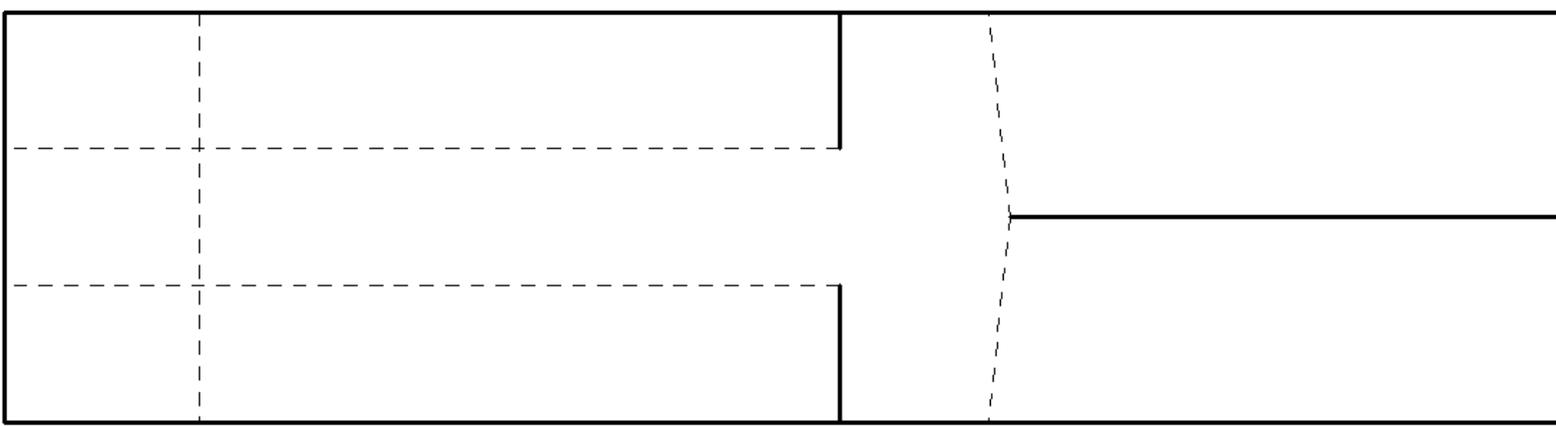


Have the students label their blank patterns as shown here. (See lesson plan procedure)

If you wish to do this activity with older students, then instead of the simple questions given in this lesson, you can address such things as air foils, air resistance, aspect ratio, auto rotation, potential energy, kinetic energy, etc.

You can also allow the students to attempt design improvements and then time how long it takes the various helicopters to fall from a given height.

Maybe have a competition to see whose helicopter can stay in the air the longest.



Here are the blank patterns for the students. Make copies as needed.