

Year 5 Design and Technology: Automata project

These sheets are intended to support the Year 5 *Automata* project by helping ensure that all the aspects of a Design and Technology project are addressed and covered.

Index of sheets:

Evaluating existing products

- Evaluating : investigating automata, a double-sided sheet (investigating existing products – ideally children would each complete two of these for different automata)

Establishing the design criteria

- Designing: my survey/questionnaire/interview results – outlining the results of the research from potential users in respect of the types of design they would find appealing.
- Designing: overview – outlining what is being designed, the user, the purpose, etc.
- Designing: design criteria for my automaton

Generating ideas for a design

- Designing: ideas for my automaton (this is for the children's first ideas and the sheet could be reproduced back-to-back hoping for at least three different ideas)
- Designing: improving and developing the best ideas for my automaton (this is where children show they can develop their first ideas, maybe combining the best features from the different ideas they started with, also adding detail)
- Designing: presenting my selected design idea (this is for children to detail the product they intend to make – it is not their “final design” as they need to be encouraged to modify their design throughout the making process as they find and overcome problems and, perhaps, have other and better ideas to modify their design – this is the iterative process; there is a version of this sheet with an isometric grid)

Planning the making stage

- Making: selecting the tools, equipment, materials and components 1 & 2 (these are for the children to record their choices and to explain those choices)
- Making: planning the work (There are a series of alternative styles of sheet for this activity. The first two are alternative styles of sheet on which children could record a plan for the whole project. Of potentially more value are the following set of sheets for planning the work of three specific elements of the project – constructing the crank mechanism, the cam mechanism and the figurative elements)

Making

- Making: further improving my design while I am making it (for the children to fill in as they identify and overcome problems and make further improvements during the making stage)

Evaluating

- Automaton – a presentation drawing of my finished product
- Evaluating: my own thoughts about my automaton (there are two alternative versions of this sheet)
- Evaluating: user's evaluation sheet (a sheet to collect feedback from the person/people you made the automaton for)

Teachers' notes

The following link helps to explain the four different kinds of motion: <http://www.engagerevision.co.uk/mechanisms.swf>

In relation to the "Making: planning the work" sheets:

- for the crank mechanism, the following parts need to be made and positioned on the frame: axle, crank, crank handle, axle guides;
- for the cam mechanism, the following parts need to be made and positioned on the axle and frame: cam, cam follower and cam follower guide

Evaluating: investigating automata

Draw one of the toys you have examined and show:

- which parts turn;
- which parts move;
- how the different parts are attached to allow movement;
- how the moving parts are guided and kept in place.

(You might need to draw several small sketches to do this.)

Also:

- label all the types of motion;
- label the materials the toy has been made from;
- record how the toy has been 'finished' (eg painted, polished etc);
- say who the toy has been designed and made for;
- say why you think the designer has chosen to make a moving toy like this.

Make sure that you understand these terms:

- linear motion;
- rotary motion;
- reciprocating motion;
- oscillating motion.



Designing: overview

What I am designing and making (the product): _____

Who I am making it for (the users): _____

What it is for and what it should do (its purpose/purposes): _____

How it will work: _____

How it is suitable for the person/people I am making it for: _____

Designing: design criteria for my automaton

I am designing and making an automata for _____

I want my automata to (list the most important feature first):

1. _____

2. _____

3. _____

4. _____

5. _____

Further notes:

Name: _____

Designing: ideas for my automaton

Ideas for my automaton:

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Name: _____

Designing: improving and developing the best ideas for my automaton

(If you model your ideas in paper, stick your paper models onto these sheets too).

Designing: presenting my selected design idea

Draw and label the final design you have chosen.

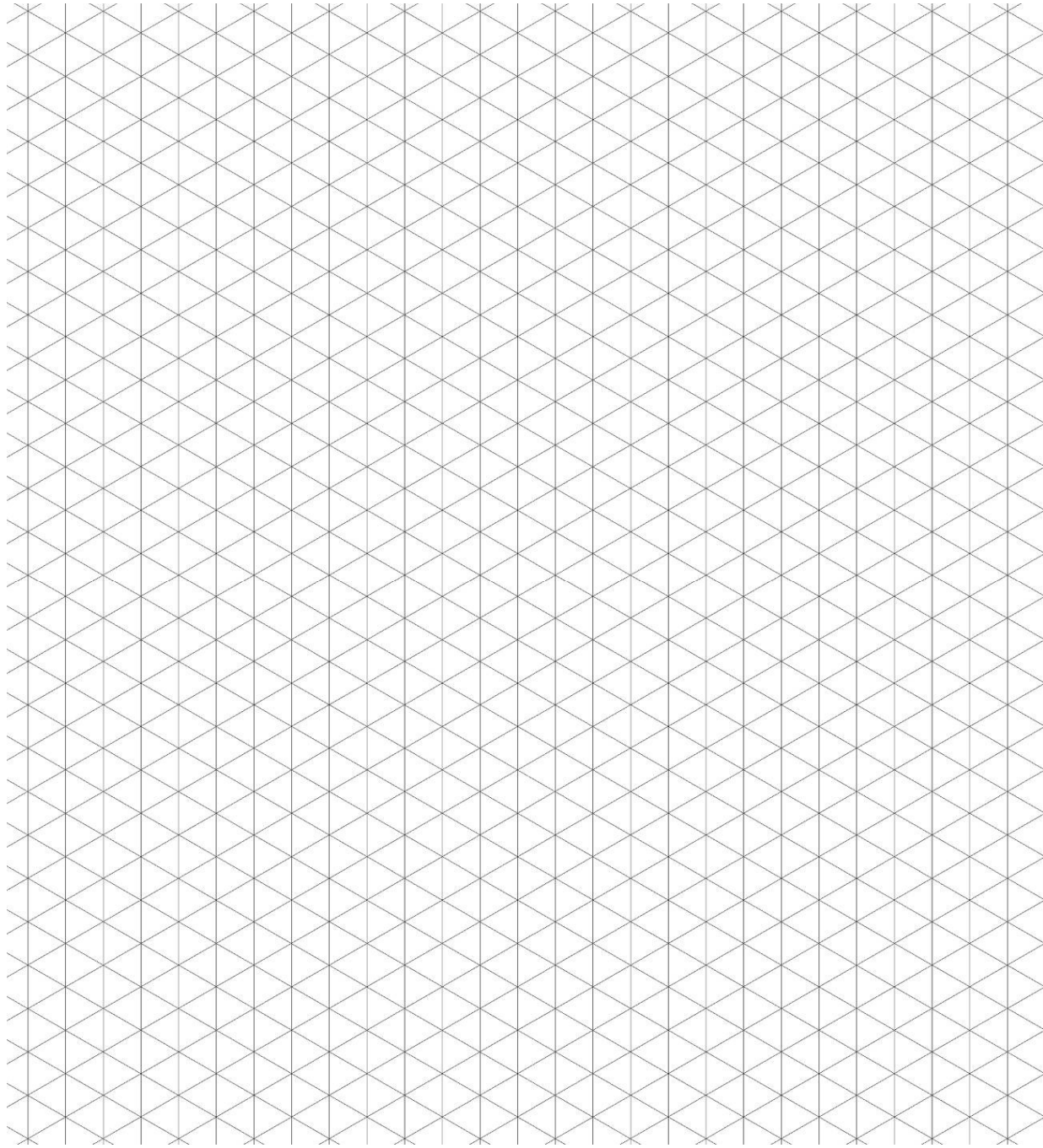
Useful words:

- cam
- cam follower
- axle
- crank
- handle
- lever
- cam follower guide
- dowel
- 1cmx 1cm stripwood
- card



Name: _____

Designing: presenting my selected design idea (isometric paper)



Name: _____

Making: selecting the tools, equipment, materials and components (1)

List the tools and equipment you considered using on the lines below.
Put a ring around those you choose to use to make your automaton.

List the components and materials you considered using for your automaton and to decorate it on the lines below.
Put a ring around those you choose to use to make your automaton.

Making: planning the work

Action plan:

List the sequence of activities you will need to go through to make your automaton:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Make a pattern/template.

When you have finished using it, glue it here.

Making: planning the work

My sequence of work: the order in which I will mark, cut, shape, join, decorate and finish elements of my automaton and combine them into my finished product.

The tools and materials I will need:

Things I need to think about while I am making my automaton:

Making: planning to make the crank mechanism

My sequence of work: to mark, cut, shape, join and finish components and construct the crank mechanism

The tools and materials I will need:

Things I need to think about while making my crank mechanism:

Making: planning to make the cam mechanism

My sequence of work: to mark, cut, shape, join and finish components and construct the cam mechanism

The tools and materials I will need:

Things I need to think about while making my cam mechanism:

Making: planning to make the figures/objects 1

My sequence of work: to mark, cut, shape, join and finish components and construct the figures/objects

The tools and materials I will need:

Things I need to think about while making my figures/objects:

Making: planning to make the figures/objects 2

Make a pattern/template.

When you have finished using it, glue it here.

Making: improving my design further while I am making it

As you are making your product,
list the problems you come across here:

Describe the solutions to these problems :

•

•

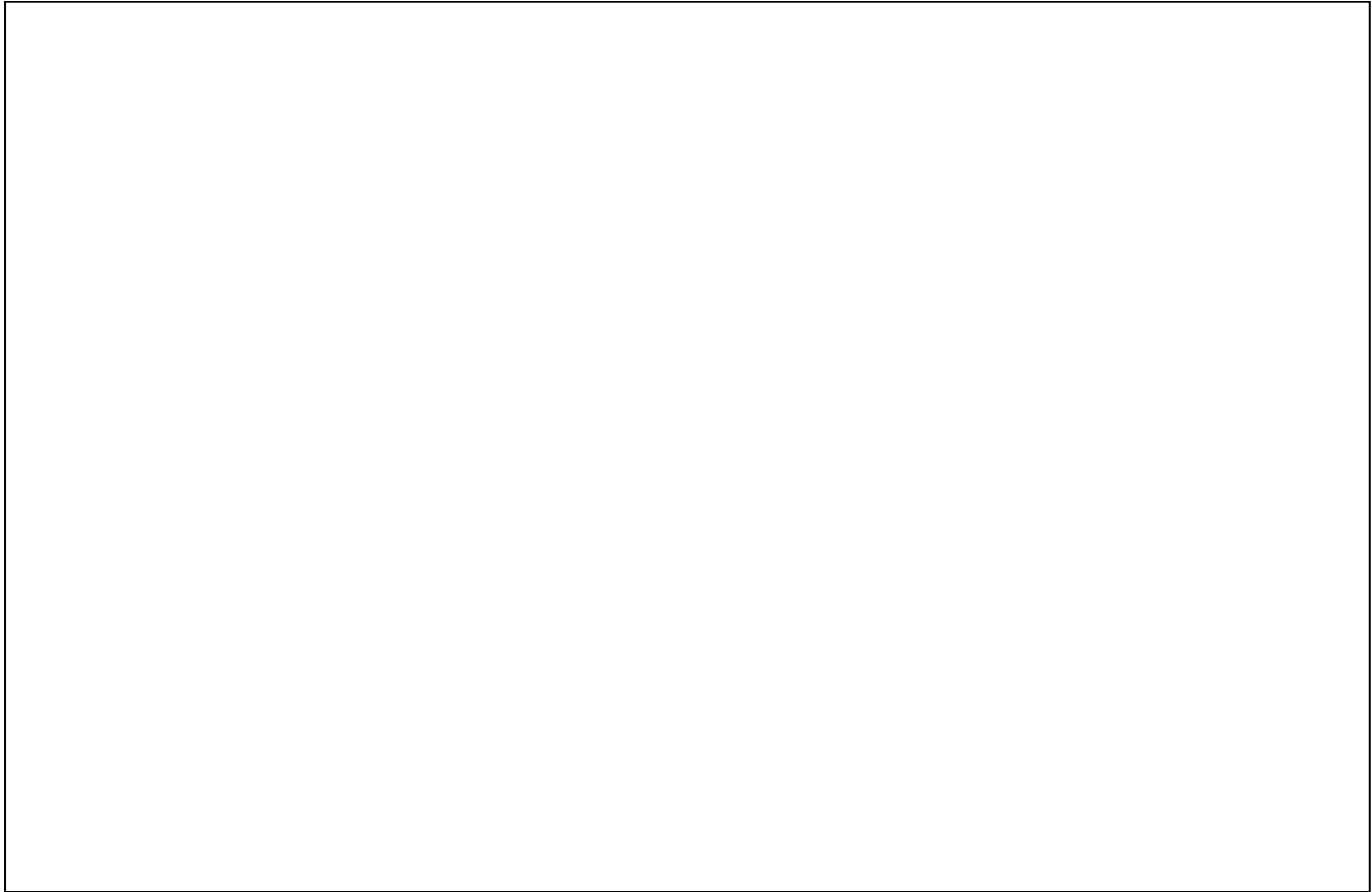
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•

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Name: _____

Automaton – a presentation drawing of my finished product



Evaluating: my own thoughts about the automaton

After you have finished and tested your automaton, say how well you think it meets your design criteria.

Design criteria	Tick			Comments
	Fully meets	Partially meets	Does not meet at all	
1				
2				
3				
4				
5				

What are the best parts of your design?

What parts of your design would you change and why?

Evaluating: my own thoughts about the automaton

Does your automaton have all the features you identified earlier? If not, why not?

What do you like about your automaton?
What could you improve about your automaton?

How could you plan your work better in future projects?

What have you learnt from doing this activity?
Where else can you use these new skills?

Evaluating: user's evaluation sheet

Does the automaton have all features you wanted? If not, what is missing or lacking?

Thinking about how well the automaton "works":
What do you like about the automaton?
What would you like to be improved?

Thinking about how well the automaton is made:
What do you like about the automaton?
What would you like to be improved?

Thinking about how good the automaton looks and feels:
What do you like about the automaton?
What would you like to be improved?