DIGITAL SCHOOLHOUSE together with NINTENDO SWITCH

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contact@digitalschoolhouse.org.uk

Name: _____ Form: _____

Origam-orithms.

(Origami Algorithms) by Mark Ward

As you already know, an algorithm is a set of rules that must be precisely followed to solve a problem.

The rules don't always have to be written as words, but could use pictures too.

Can you follow the 'origam-orithms' on the following pages to create each festive item?

Once you have finished, you need to answer the following questions:

Were the origam-orithms easy to follow?
Why/why not?
Do you think having pictures and words is better than just words?
Why?
Why is it important that the origam-orithms are precise, and each instruction is in the right order?

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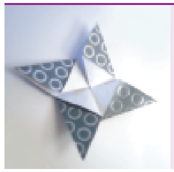
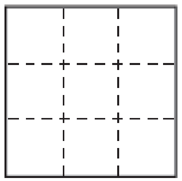
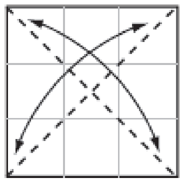


Origami
4 - Pointed Star

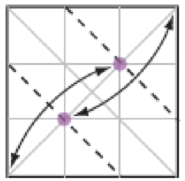
origami-fun
www.origami-fun.com



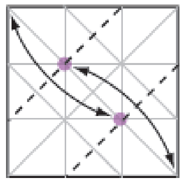
1. Make these creases, exactly in thirds. You may have to measure.



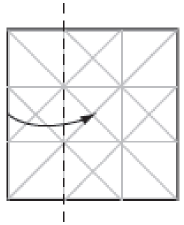
2. Now fold in half diagonally both ways, and open.



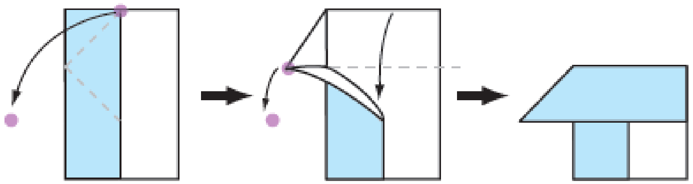
3. Fold along creases shown to points shown, and open.



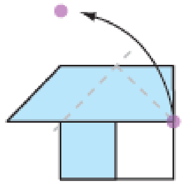
4. Do the same creases but in the other direction.



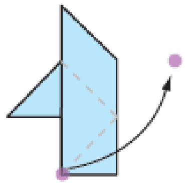
5. Fold the left third inward.



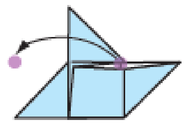
6. Using the creases shown, pull the corner from the point shown down to the other poinr shown, and flatten.



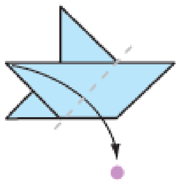
7. Again using the creases as shown, move this point to the other point, and flatten.



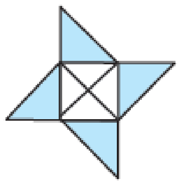
8. Again, using the creases shown, move this point to the other point and flatten.



9. Move only the inside flap outside to the point shown.



10. Fold this corner down along crease shown.



Finished 4 Pointed Star.

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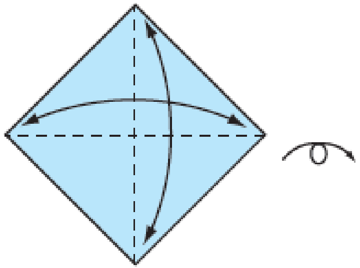
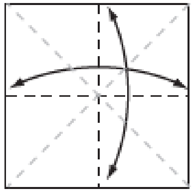
Origami Pine Tree

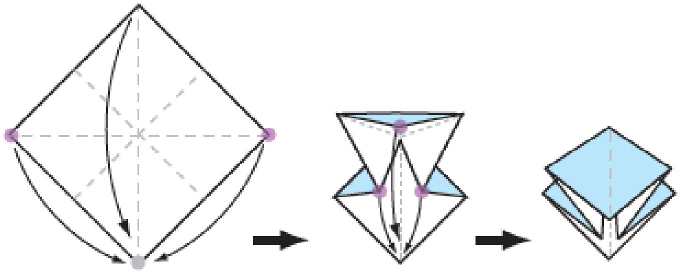
origami-fun
www.origami-fun.com



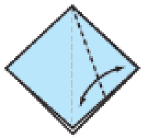
1. Start with a square piece of paper, coloured side up.
Fold the paper in half, crease well and open, and then fold again in the other direction



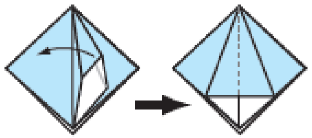
2. Turn the paper over to the white side.
Fold the paper in half, crease well and open, and then fold again in the other direction.
Your creases should look like this.



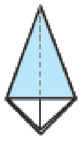
3. Using the creases you have made, Bring the top 3 corners of the model down to the bottom corner.
Flatten model.



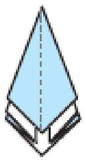
4. Fold toward centre line and unfold.



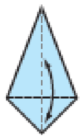
5. Using the crease you have just made, open and flatten this flap.



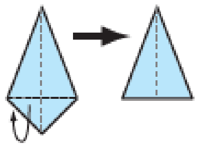
6. Repeat step 4 and 5 on the other 3 flaps of the model.



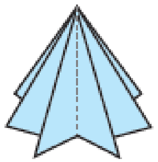
7. Now make sure there are equal flaps underneath the model, and that the top flap is showing full color, like this.



8. Fold whole model along this crease and unfold



9. Fold each full colour flap backwards underneath itself.



10. Now you can adjust your pine tree so it is even all the way around, and it stands up by itself!

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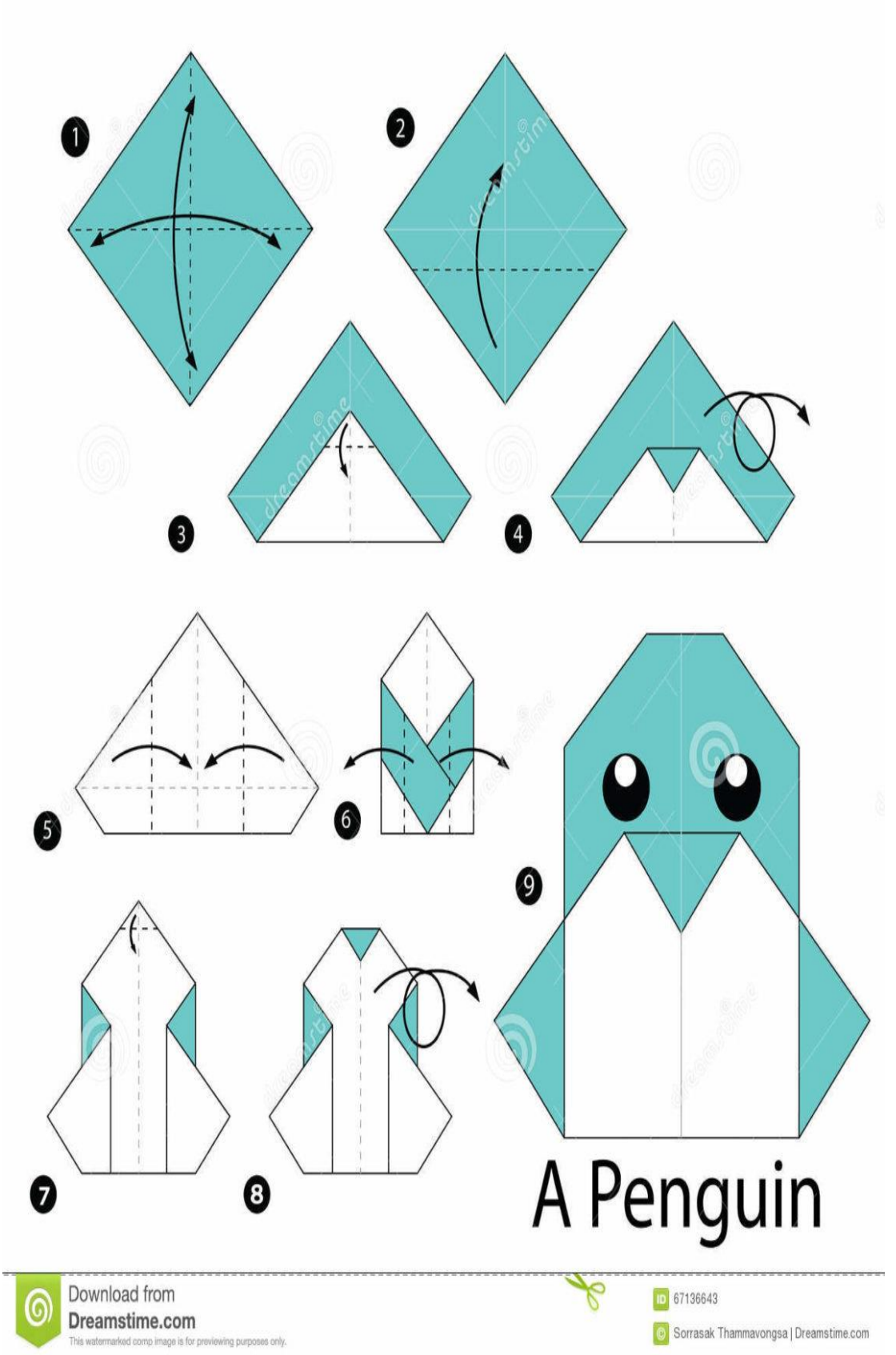

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Teacher notes:

This resource is designed as a fun, end of year type lesson, but can easily be adapted to be a starter or plenary activity to reinforce the importance of precise algorithm design.

It assumes that pupils have already used the word 'algorithm', but again, could easily be adapted.

Origami templates are downloaded from www.origami-fun.com and www.dreamstime.com and do require a certain level of 'paper agility' to create. Obviously, these can be replaced with easier or more difficult examples based on your pupils. You'll also need PLENTY of origami/square paper to create the models.

The questions I have asked are to try and tease out of pupils an understanding that without precise algorithms it gets difficult to create working computer programs, and are aimed at where the pupils in my class are right now. Obviously, these may need to be altered and/or reworded depending on where your pupils are.

Extension ideas could include getting pupils to create their own origam-orithms (for example, for a paper aeroplane) to reinforce the need for precision, or this could easily lead into work on flow charts and how 'pictures' are used to further clarify an algorithm design.

Thanks for looking and if I've saved you 5 minutes of planning, or made you think about how bad this resource and how you could do a much better job – then I've succeeded in my aim!

…and please share your improved version!

Mark

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