



Julian S. Wood

#LGfLconf19



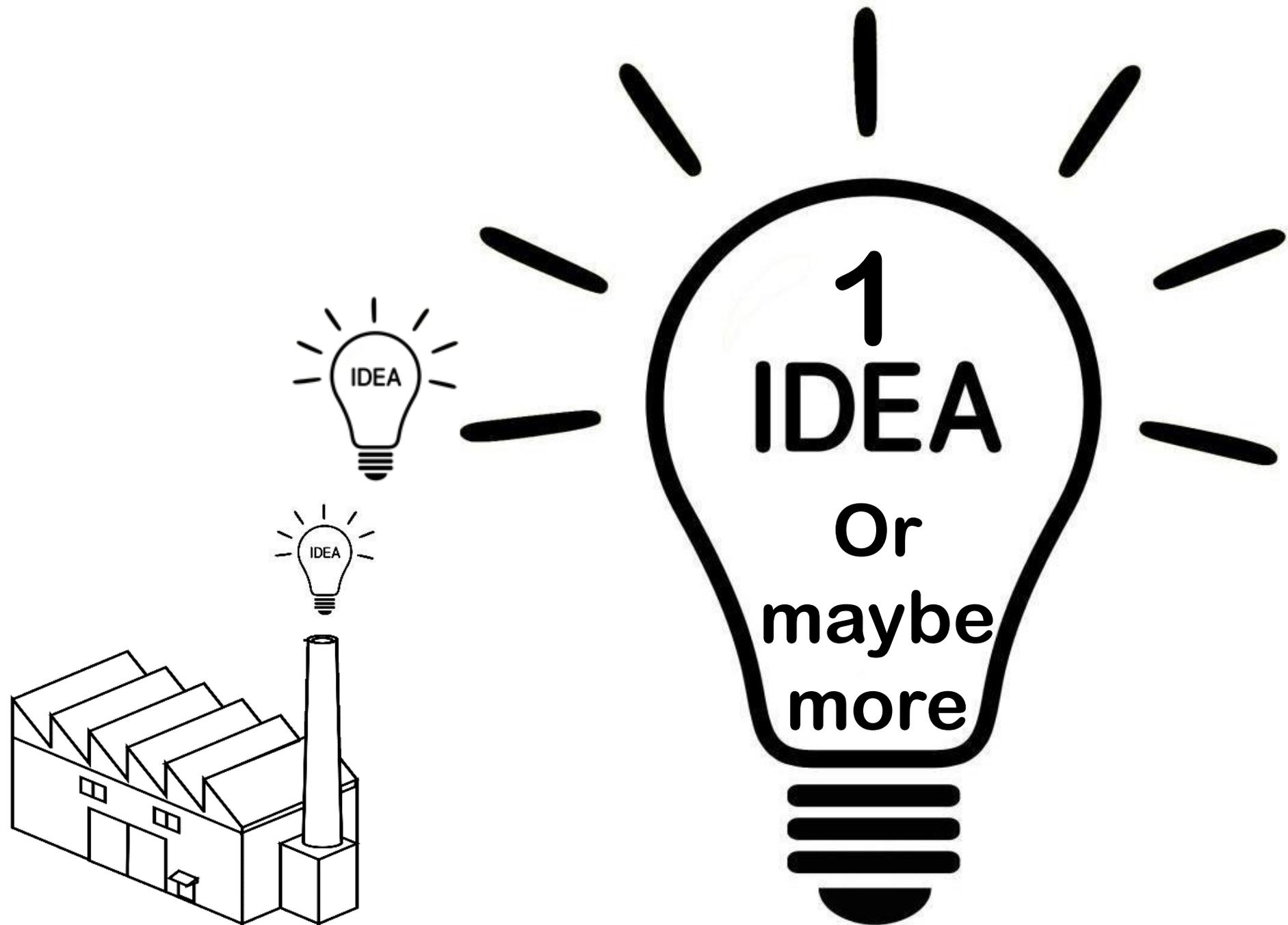
@ideas_factory

Creating Creative Computing

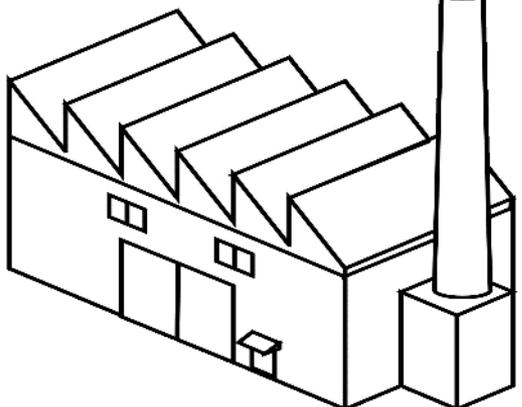
25th Apr 2019

lgflconf.lgfl.net

LGfL



1
IDEA
Or
maybe
more



Useful Links



[j.mp/](#)

**A high-quality
computing education
equips pupils to use
computational
thinking and creativity
to understand and
change the world.**



The Computational Thinkers

concepts



Logic

Predicting & analysing



Evaluation

Making judgements



Algorithms

Making steps & rules



Patterns

Spotting & using similarities



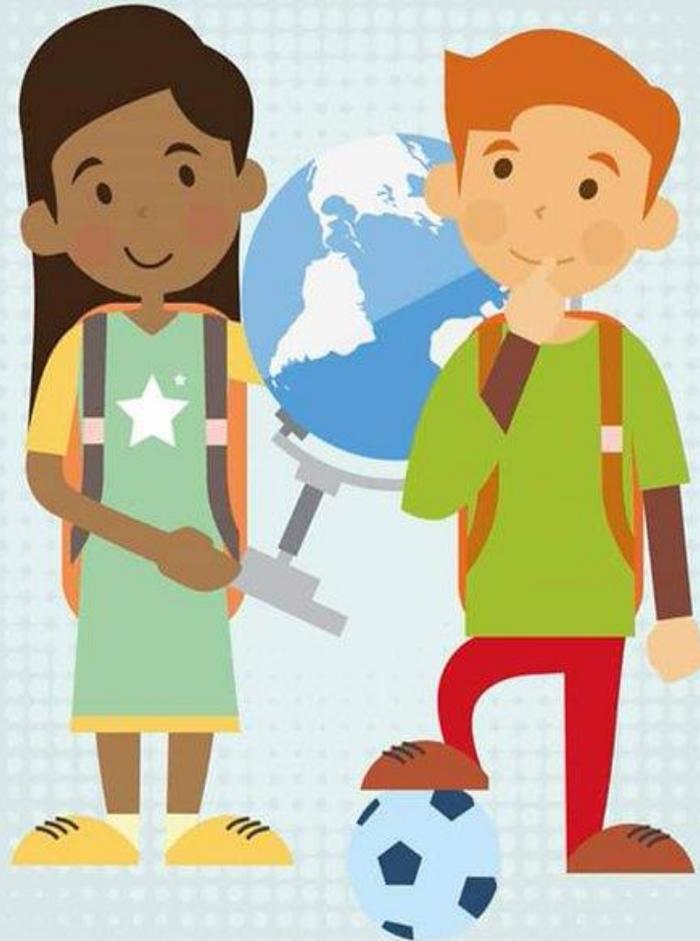
Decomposition

Breaking down into parts



Abstraction

Removing unnecessary detail



approaches



Tinkering

Changing things to see what happens



Creating

Designing & making



Debugging

Finding & fixing errors



Persevering

Keeping going



Collaborating

Working together

We're all computational thinkers here!

When you think about it, whether we're parents, pupils or teachers - we're all natural computer scientists, capable of computational thinking.

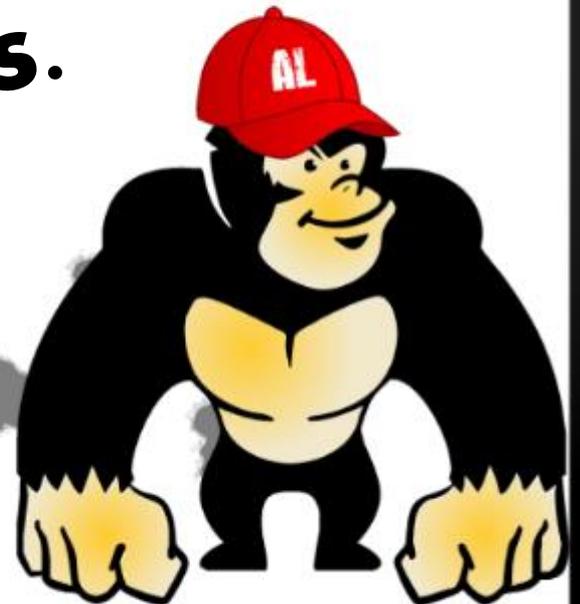
Our brains, like computers, process, debug and make simple algorithms every day!

@pddring

ALGORITHM:

step by step instructions to solve a problem

OR.....A set of rules.



Computing Curriculum

- **Key stage 1**

Pupils should be taught to:

- understand what algorithms are

- create and **FIND MISTAKES in** simple **INSTRUCTIONS FOR COMPUTERS**

- use **THINKING LIKE A COMPUTER** to predict the behaviour of simple programs

- **Key stage 2**

Pupils should be taught to:

- use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms.

FLOW DIAGRAMS

Start/Stop

Get toothbrush

Actions

Put toothpaste on toothbrush

Decisions

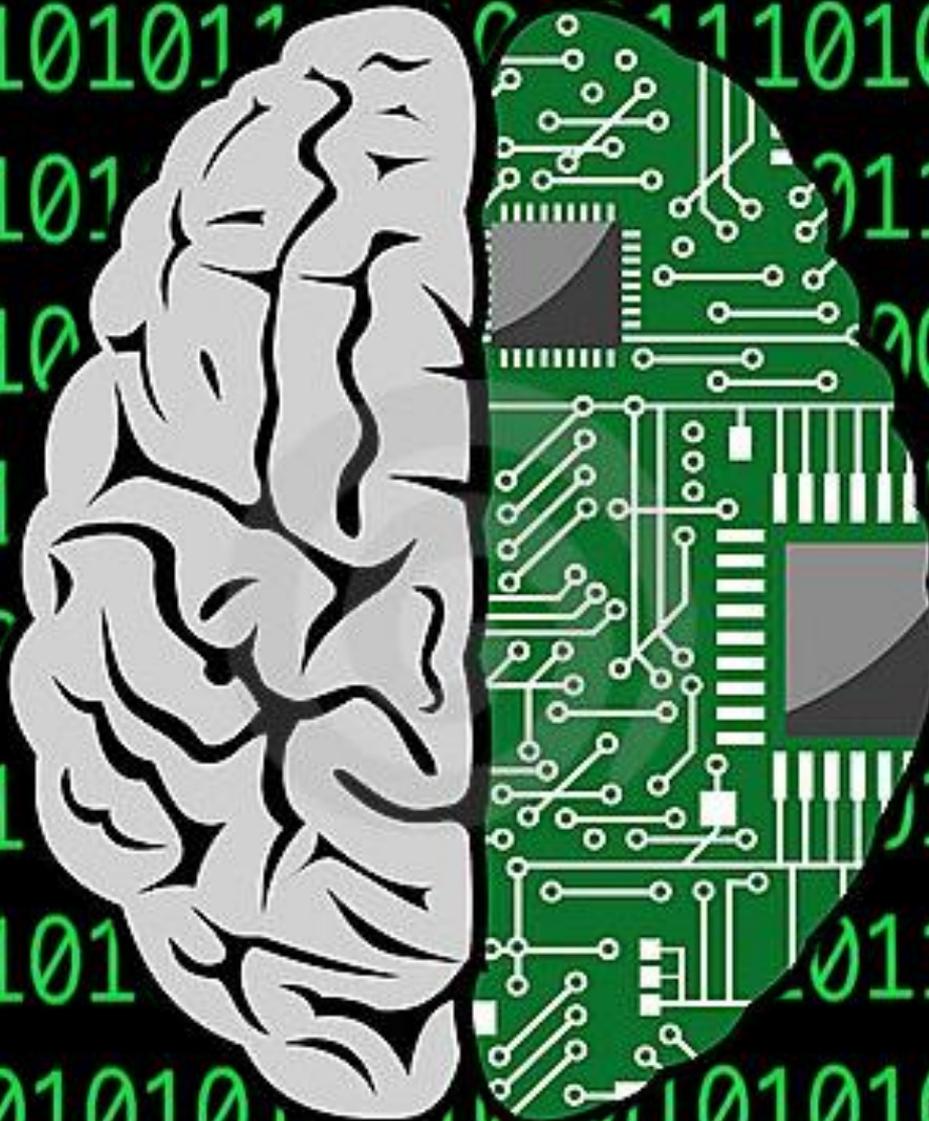
Are your teeth clean?

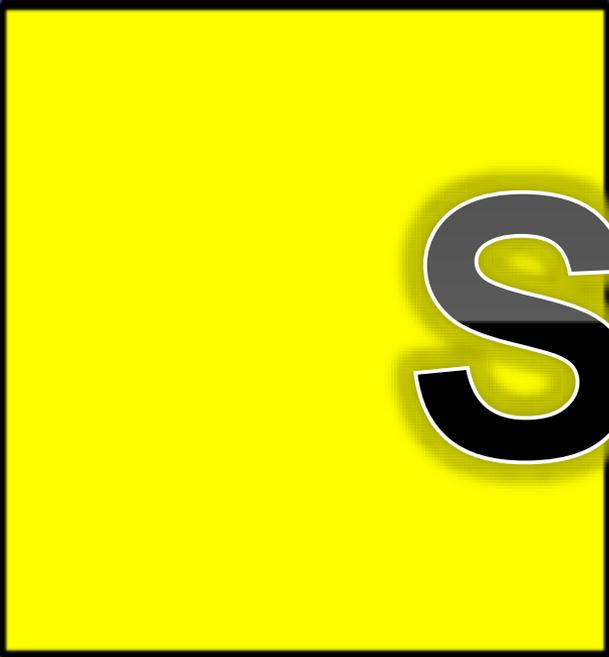
Yes

No



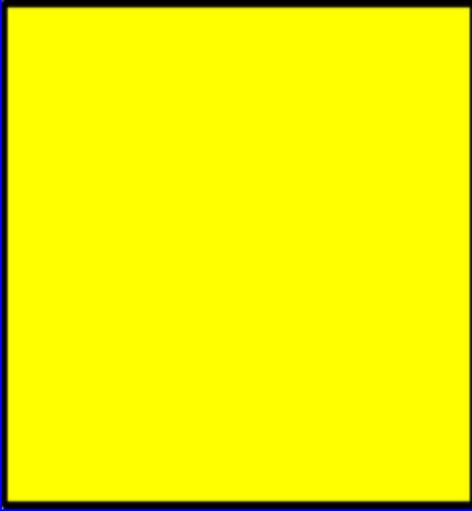
Computational Thinking



A solid yellow square with a black border, positioned on the left side of the image.

Square

Balbis ?

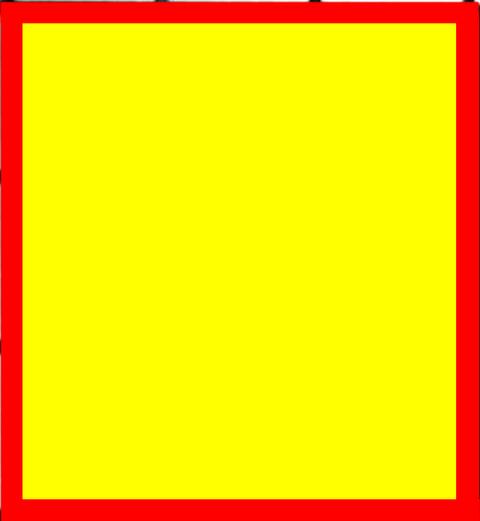


Square

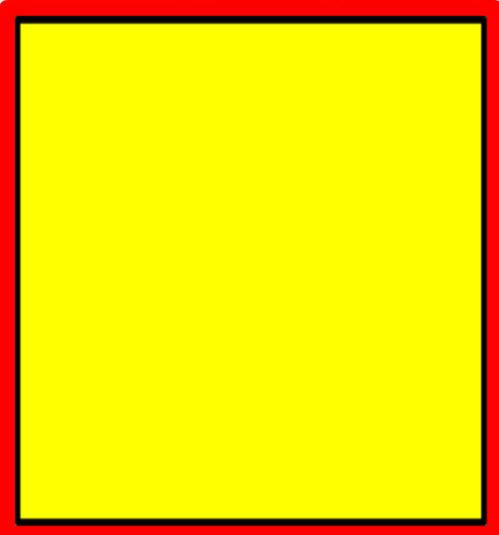
Properties (or rules) of a Square

A 4-sided flat shape with straight sides
where:

- all sides have equal length, and
- every interior angle is a right angle (90°)



You will draw a four sided shape. Draw a straight line in the direction North for five cm, then turn East and draw another straight five cm line, then turn south and draw another straight five cm line and turn west , draw another straight five cm line finally meeting the point where you started.



You will draw a shape with four sides . Start on the corner and draw a line three squares up, turn left and continue the line three squares across. Then draw a line going down three cm, finally go left and connect with the point you started from.

2 Simple Algorithms

Instructions to draw a square

1. draw a 3 cm line
2. turn left 90 degrees
3. draw a 3 cm line
4. turn left 90 degrees
5. draw a 3 cm line
6. draw a 3 cm line
7. turn left 90 degrees

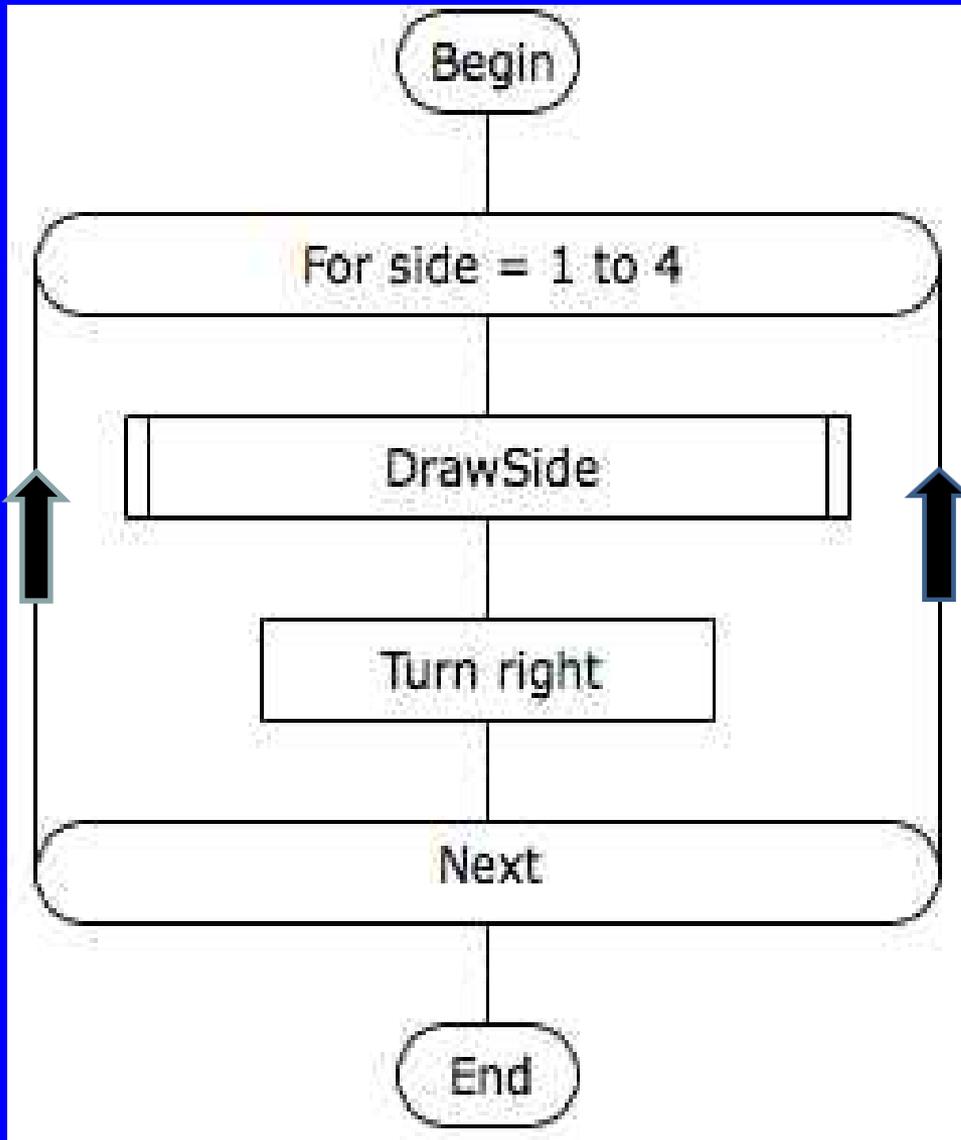
Properties of a Square

Must have-

- 4 sides
- Each side same length
- 2 equal pairs of parallel lines
- All interior angles are 90 degrees

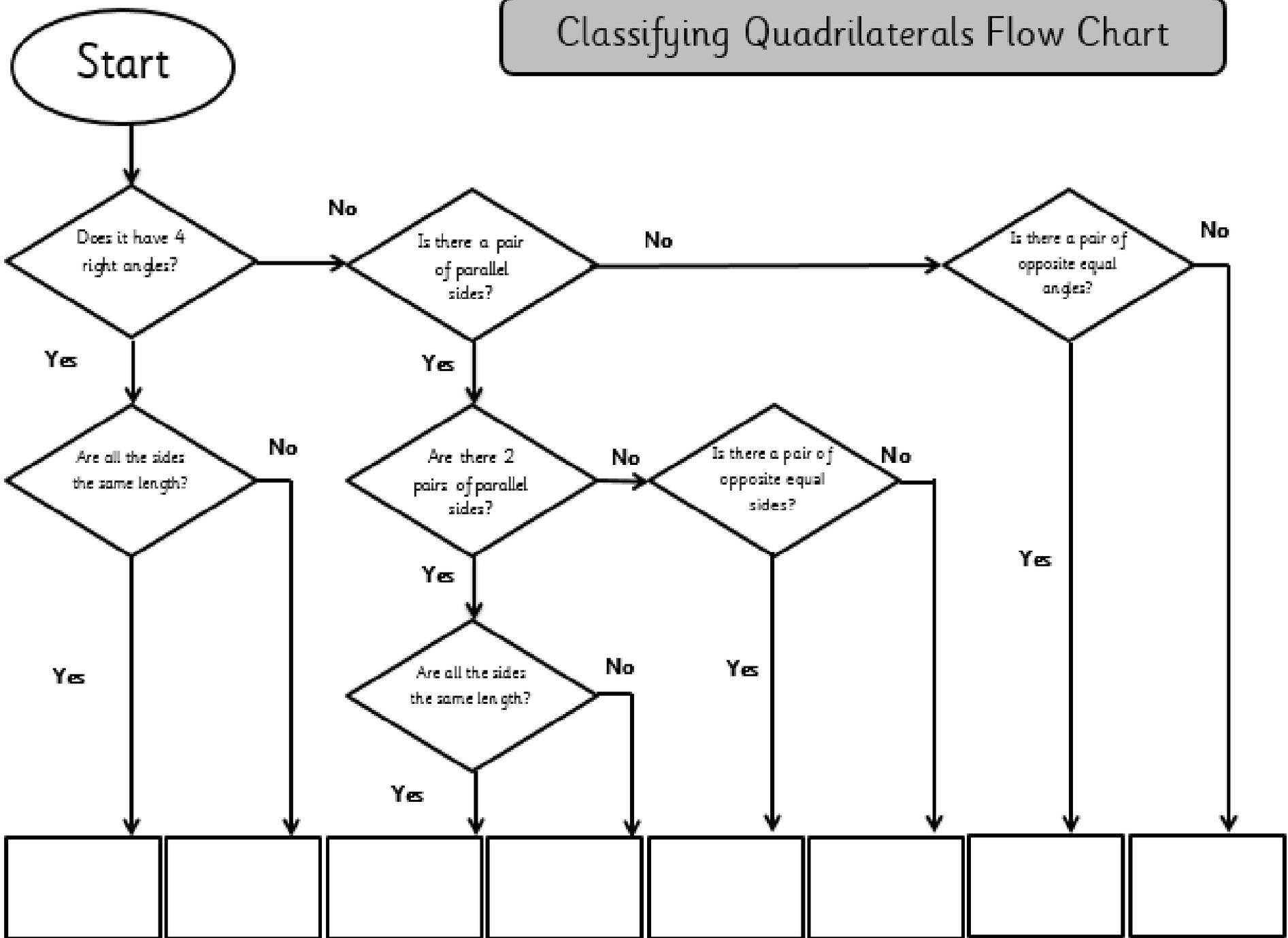
An algorithm to draw a square.

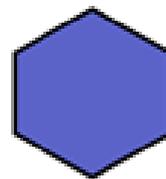
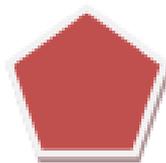
An algorithm to identify a square.



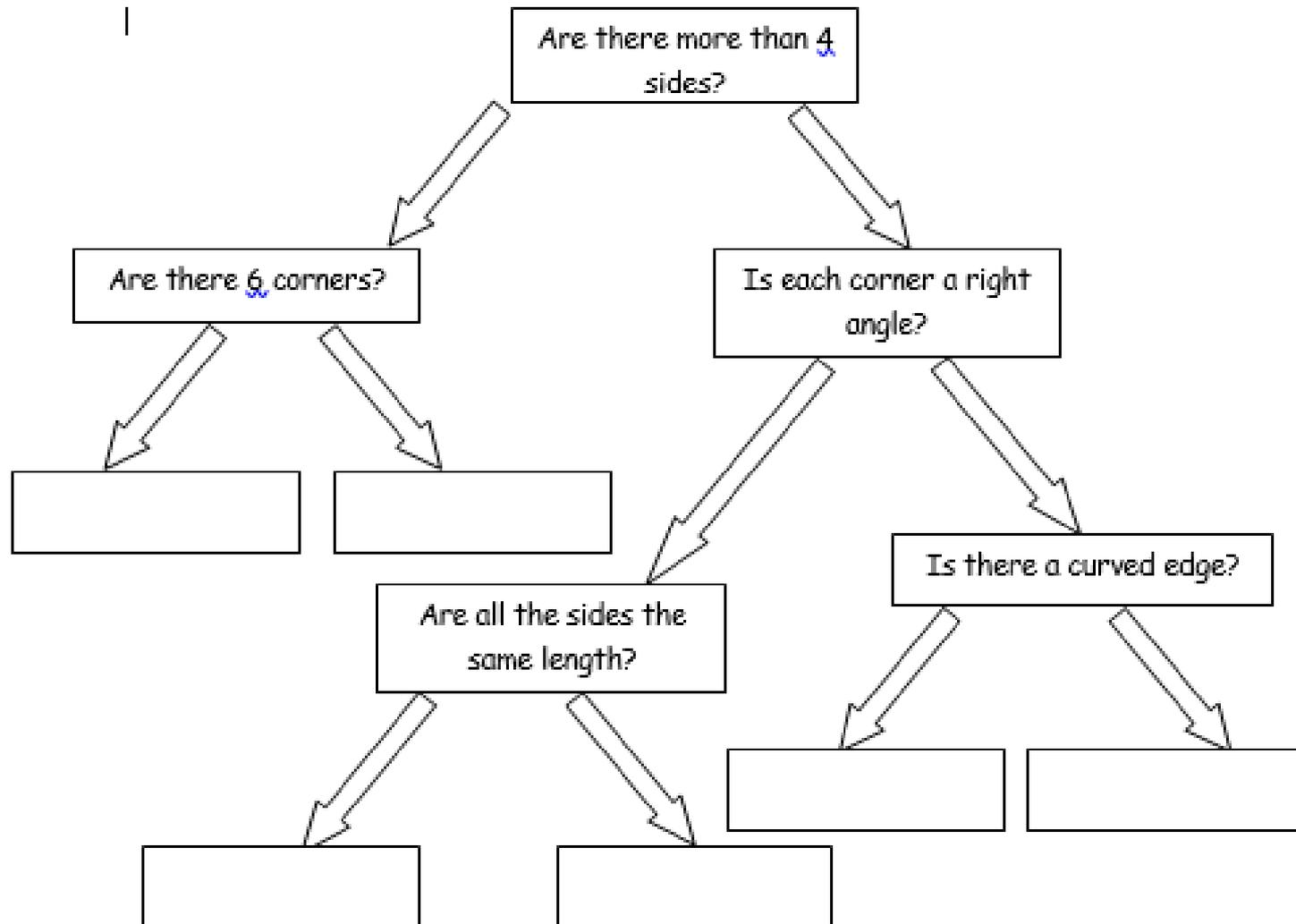
0 Start
10 Draw side
20 Turn Right
30 IF drawn four
sides GOTO 40
ELSE GOTO 10
40 END

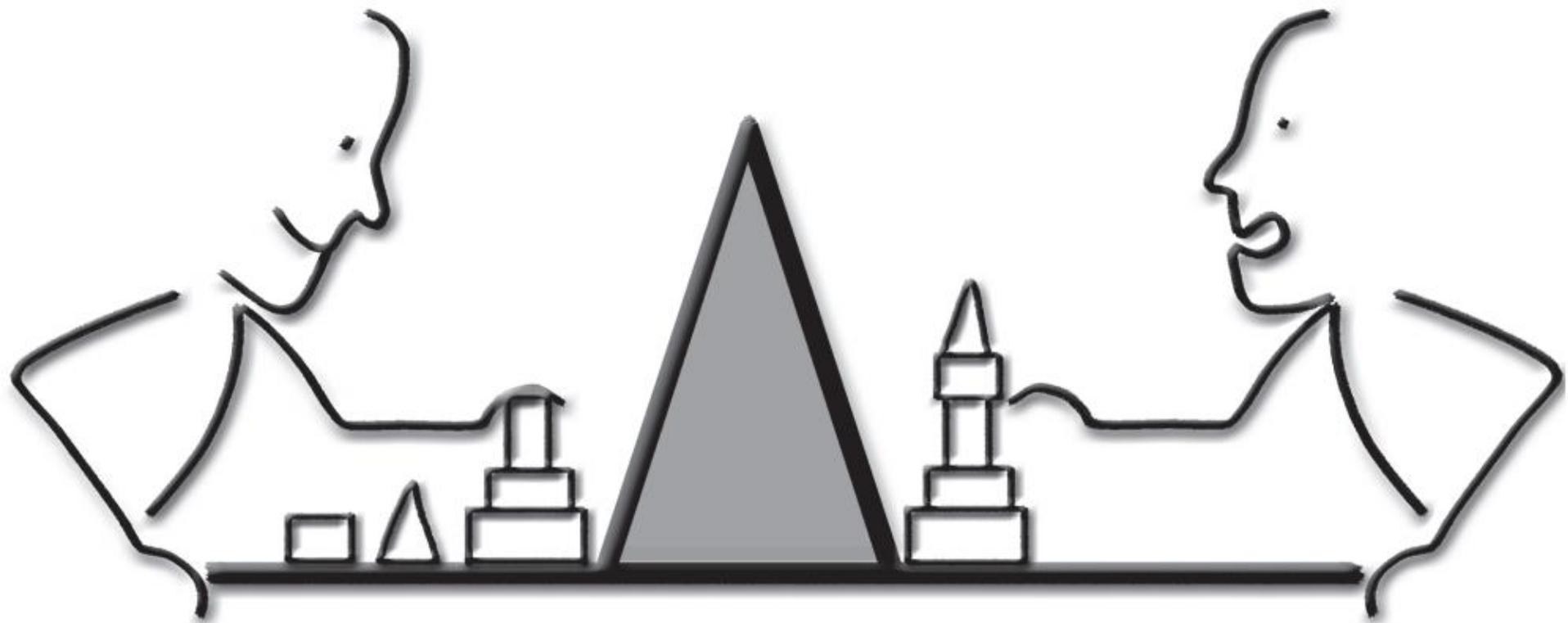
Classifying Quadrilaterals Flow Chart





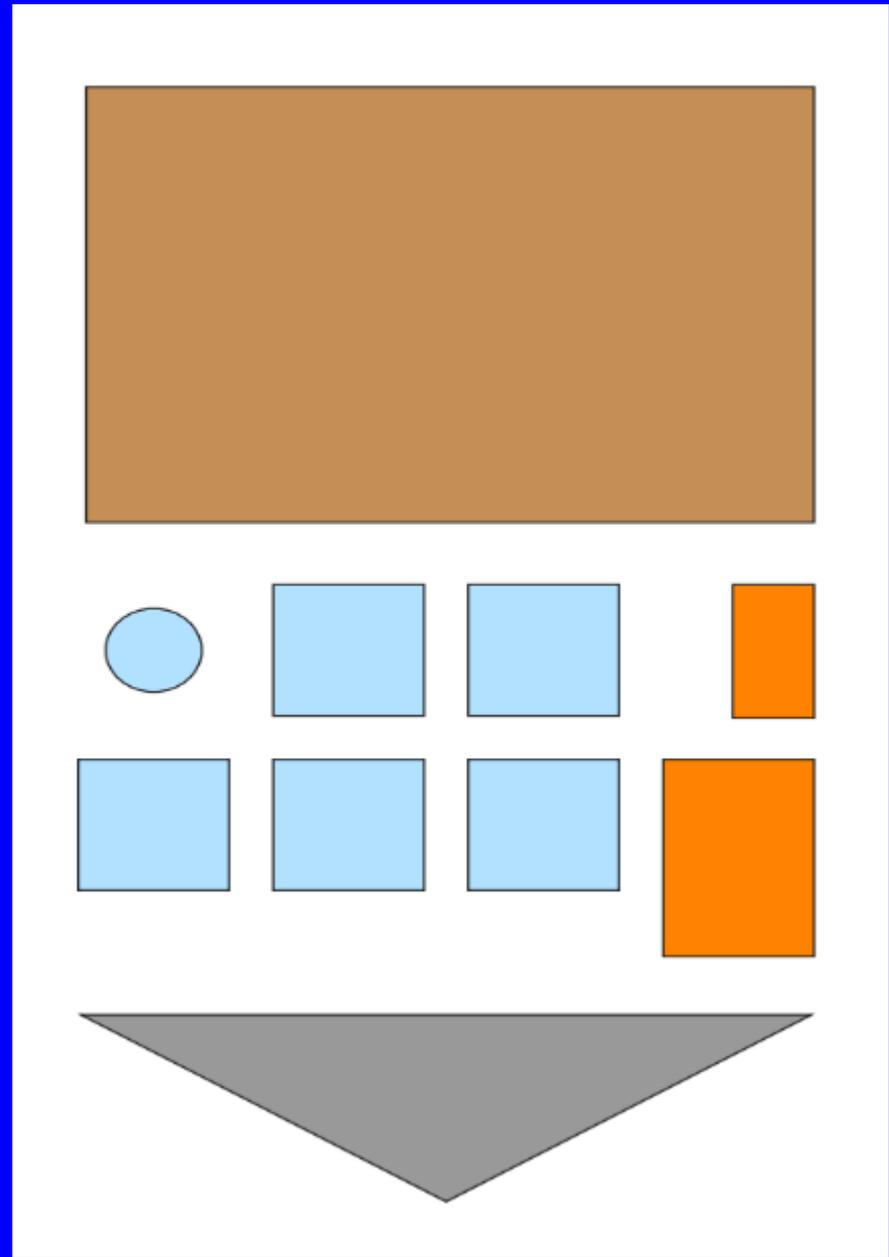
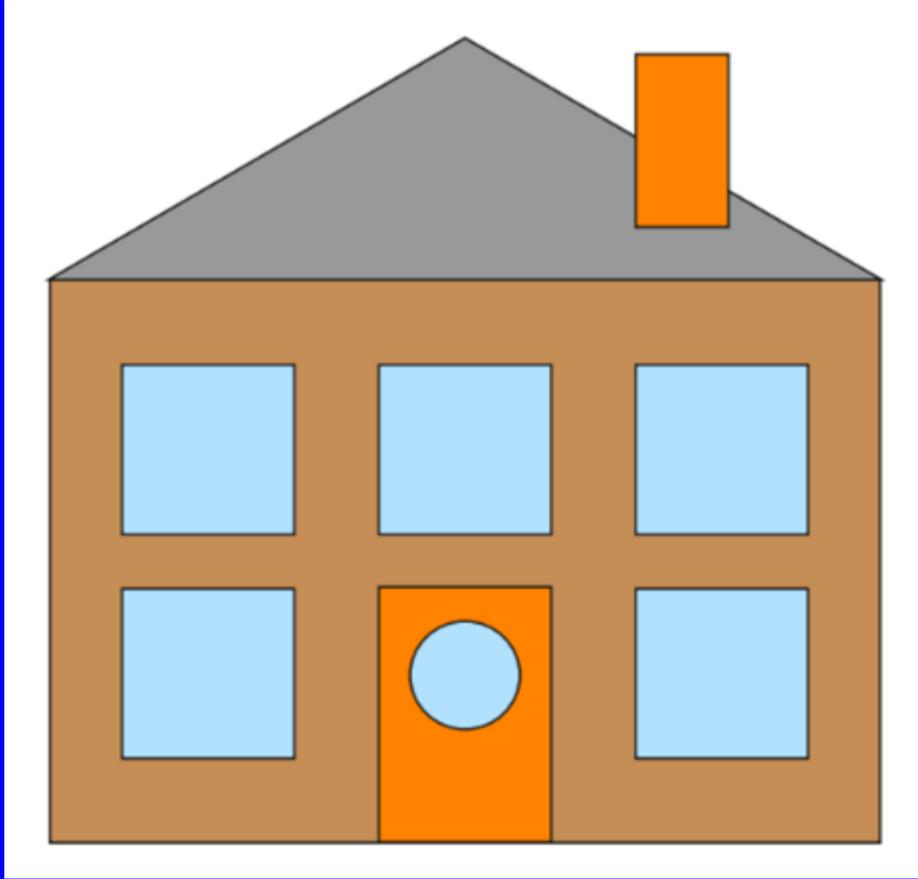
Write the correct shape name in the empty boxes of the tree diagram.

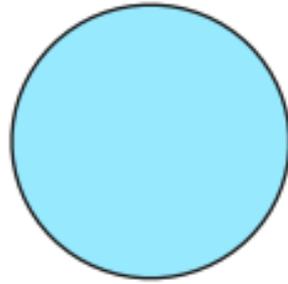
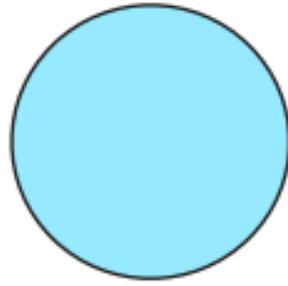
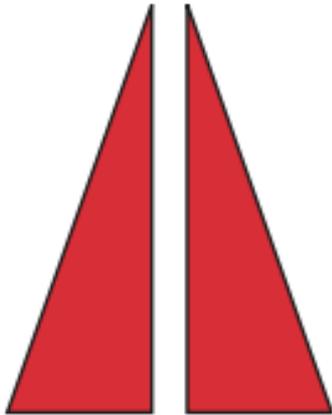
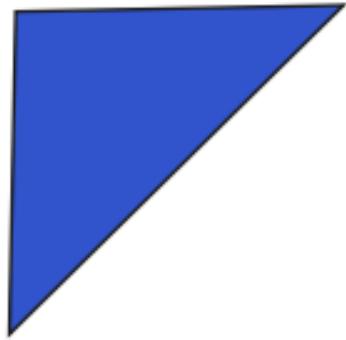
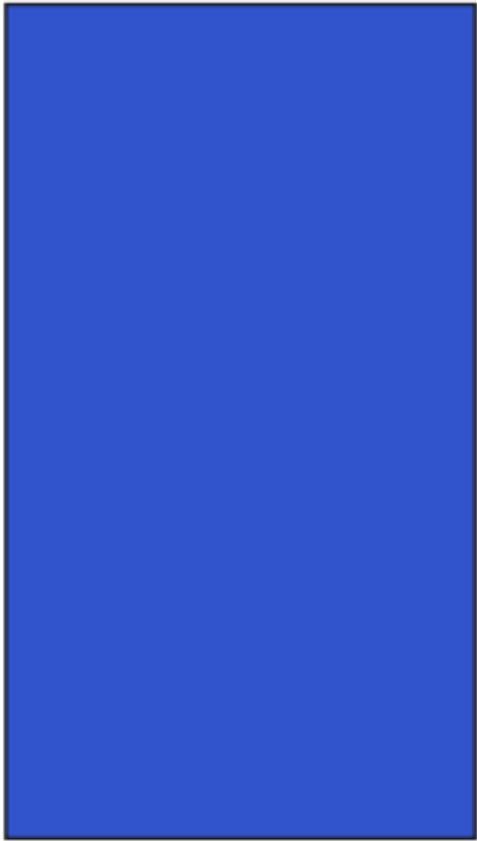




Barrier Games

j.mp/barriergamespdf





Balbis -Can you draw one?

A single line that is terminated by a secondary line at each end, both of which are positioned at right angles to the primary line.

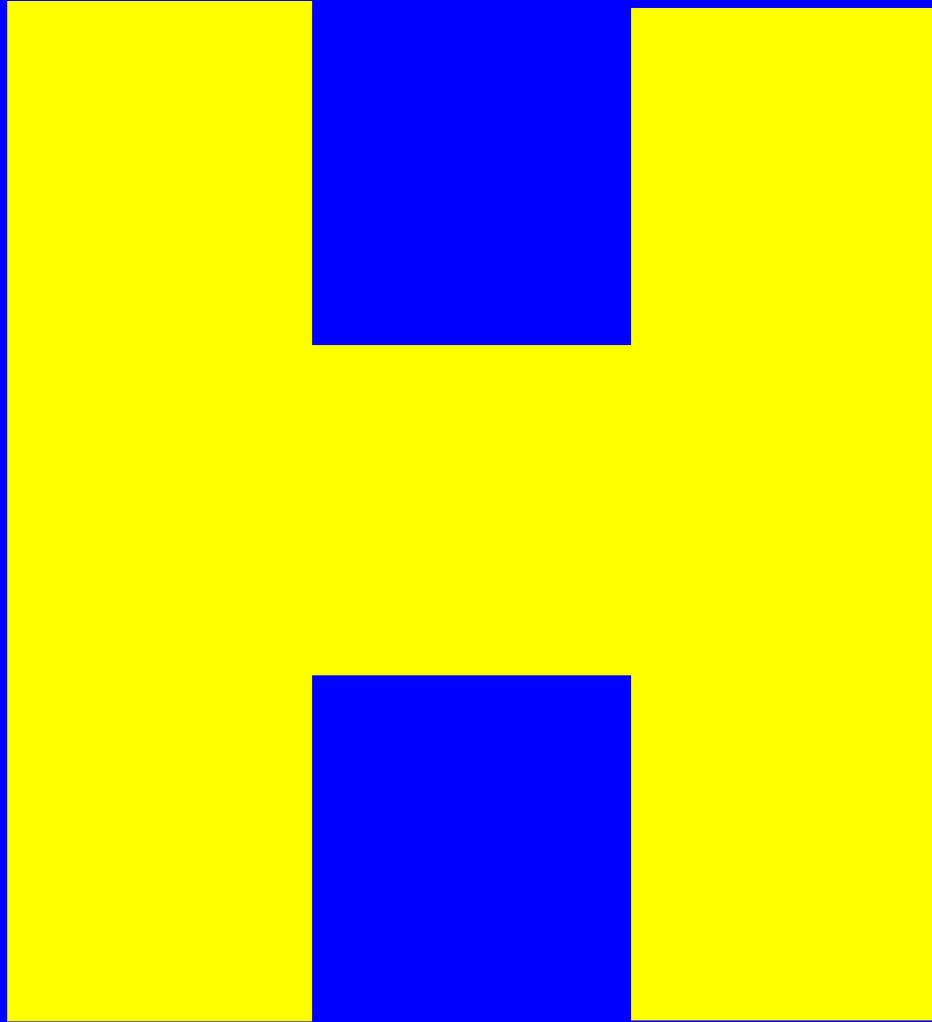
Clue 1

A balbis consists of a straight line with two other straight lines joining it at right angles. Both of the other two lines must join the middle line at its ends.

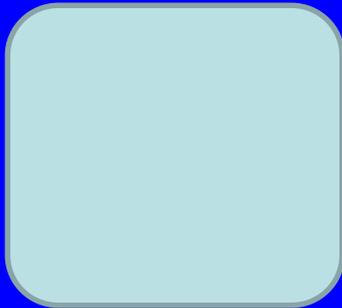
Clue 2

**The word balbis comes
from Ancient Greek
and describes the two
posts with a rope
between them which start
or finish a race.**

Clue 3



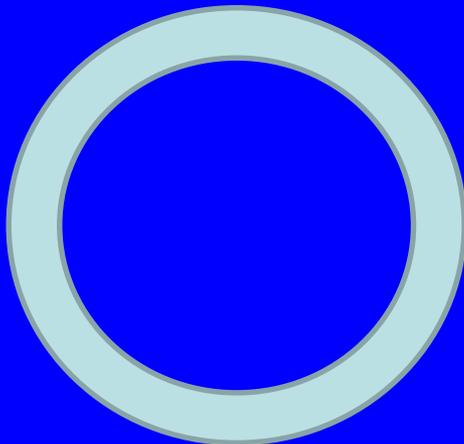
Squircle



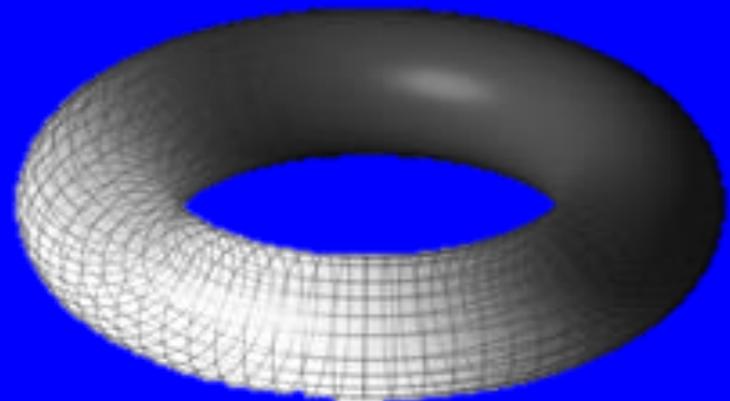
Stadium



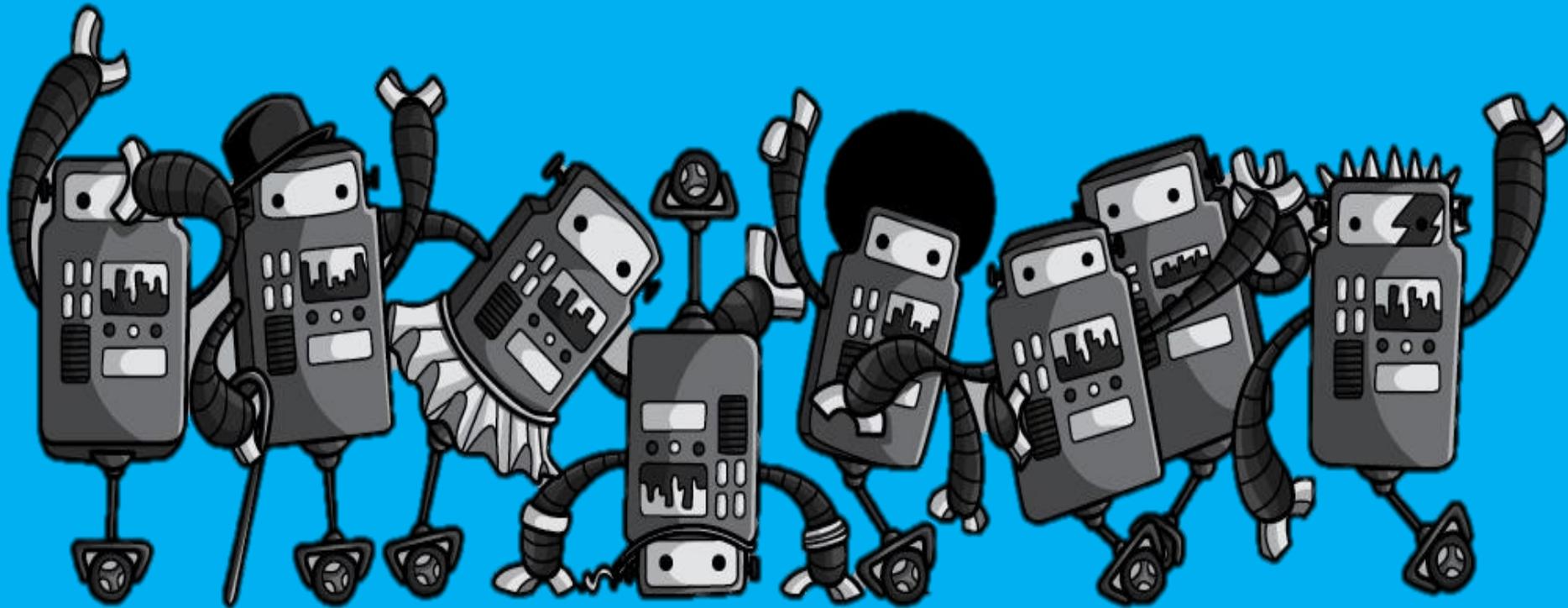
Annulus



Torus



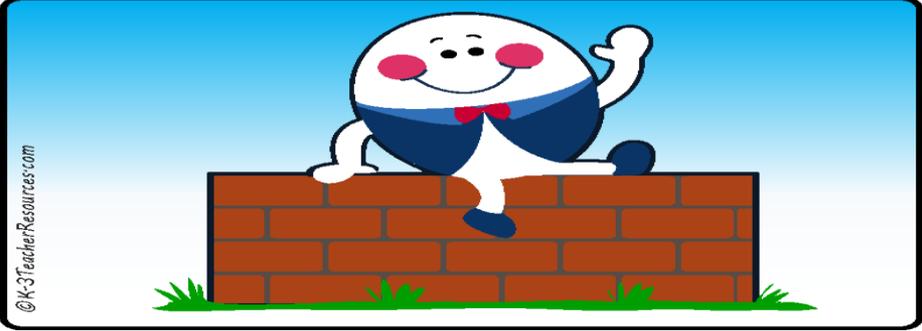
Using Music To Teach Computing



NURSERY RHYMES



j.mp/nurseryrhymecomp



All the King's
horses and
all the
King's men,

@K-3TeacherResources.com

Couldn't
put Humpty
together
again.

@K-3TeacherResources.com

Humpty
Dumpty sat
on a wall.

@K-3TeacherResources.com

Humpty
Dumpty had
a great fall.

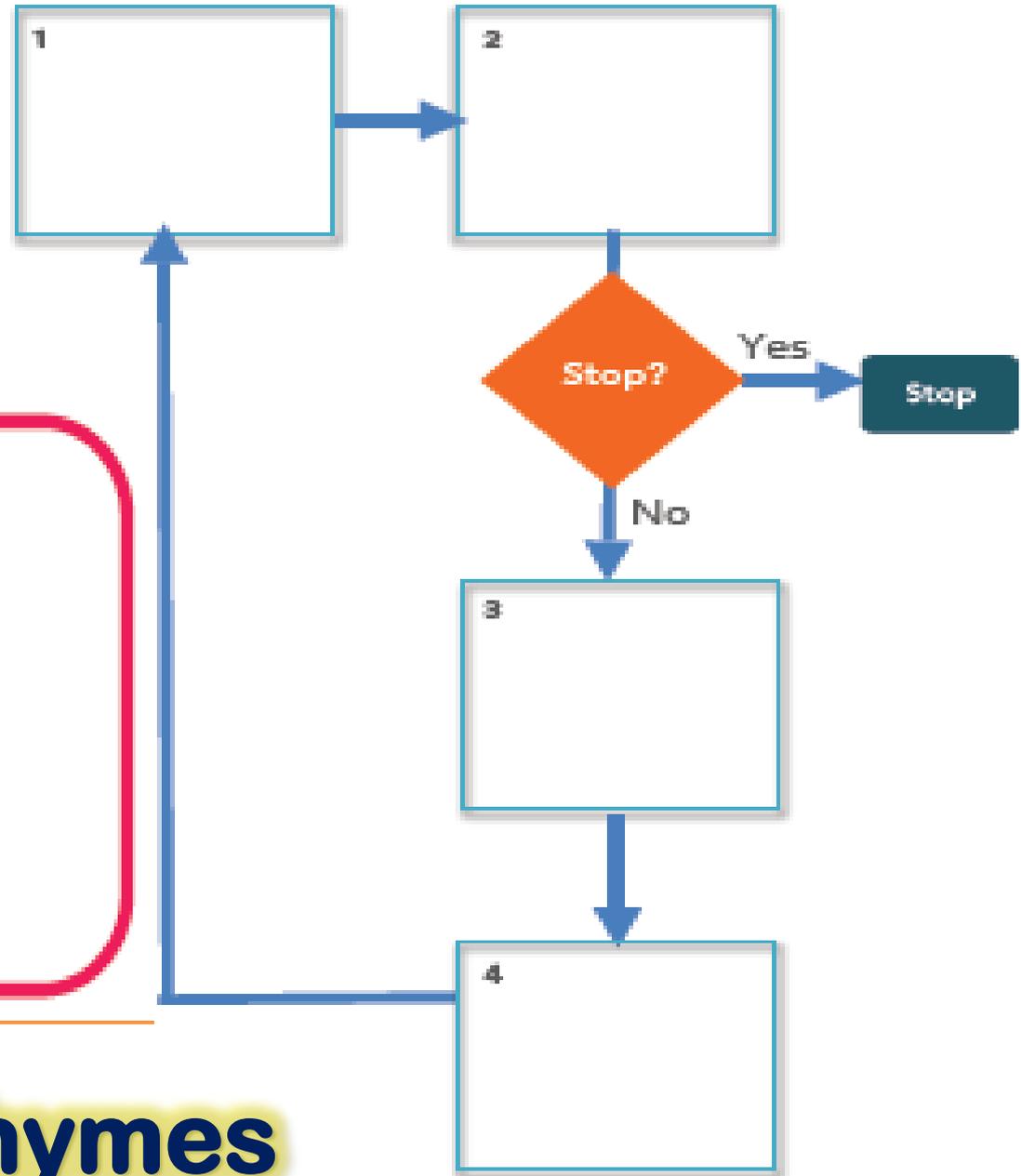
@K-3TeacherResources.com



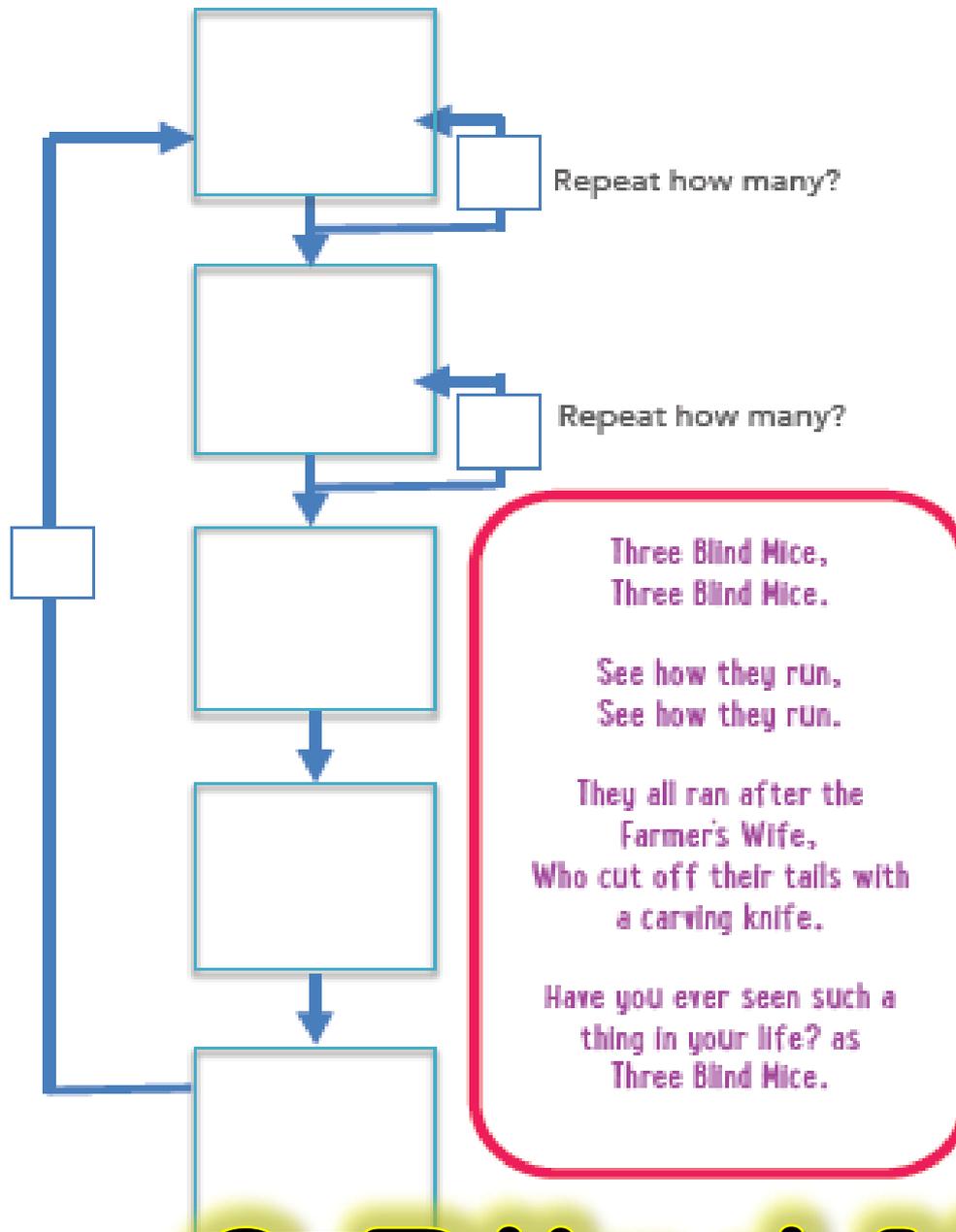
Twinkle Twinkle Little Star,
How I wonder what you are,

Up above the World so bright,
Like a diamond in the night.

Twinkle Twinkle Little Star,
How I wonder what you are.



Repeating Rhymes



3 Blind Mice

Four blind Cats, Four blind Cats,

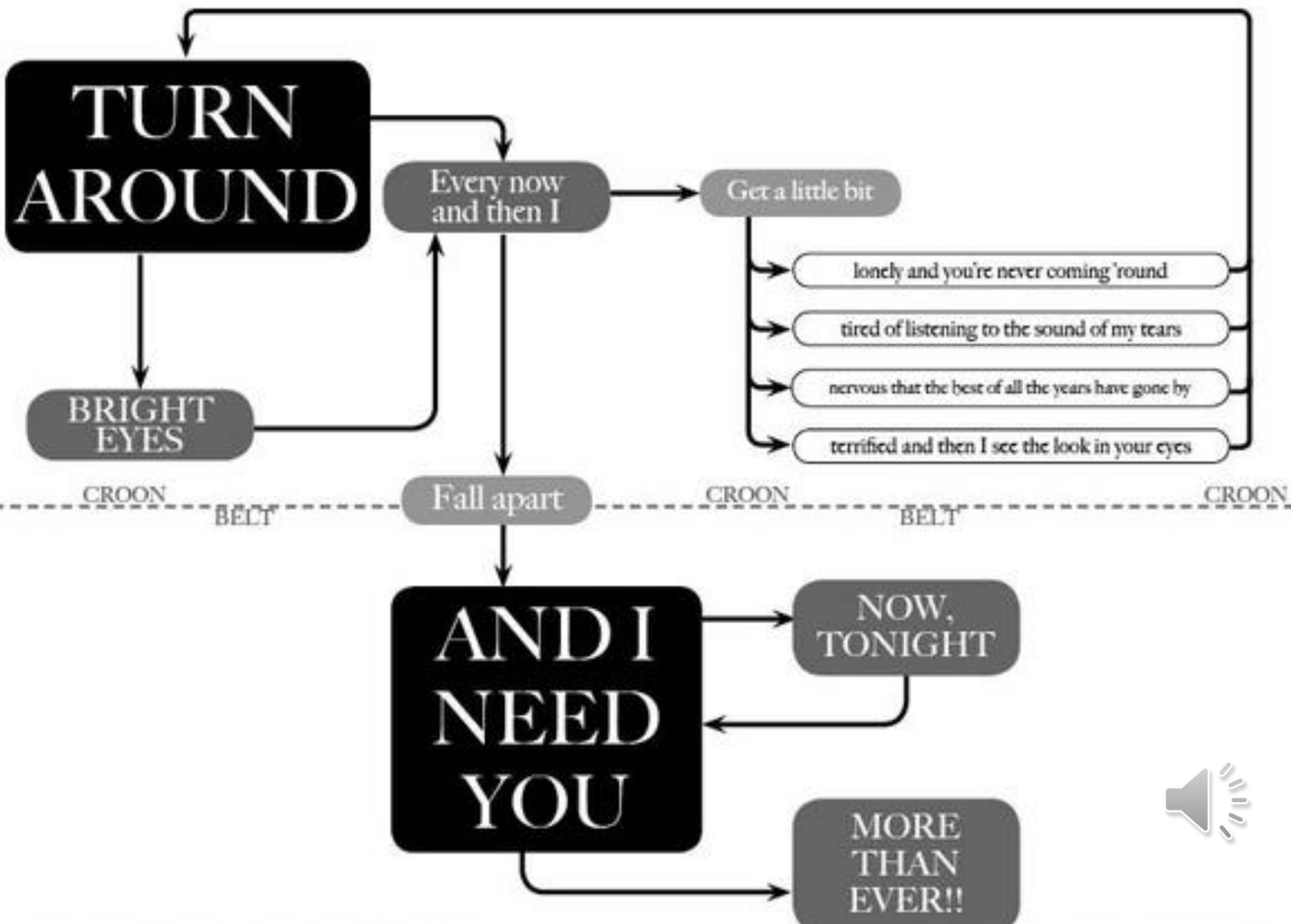
See how they skip see how they Skip,

They all skipped after the postman's son,
Who shot off their ears with a massive gun,

Did you ever see anything as stupid as that,

As Four blind Cats





Daft Punk lyrics guide



around the world

@stevebunce

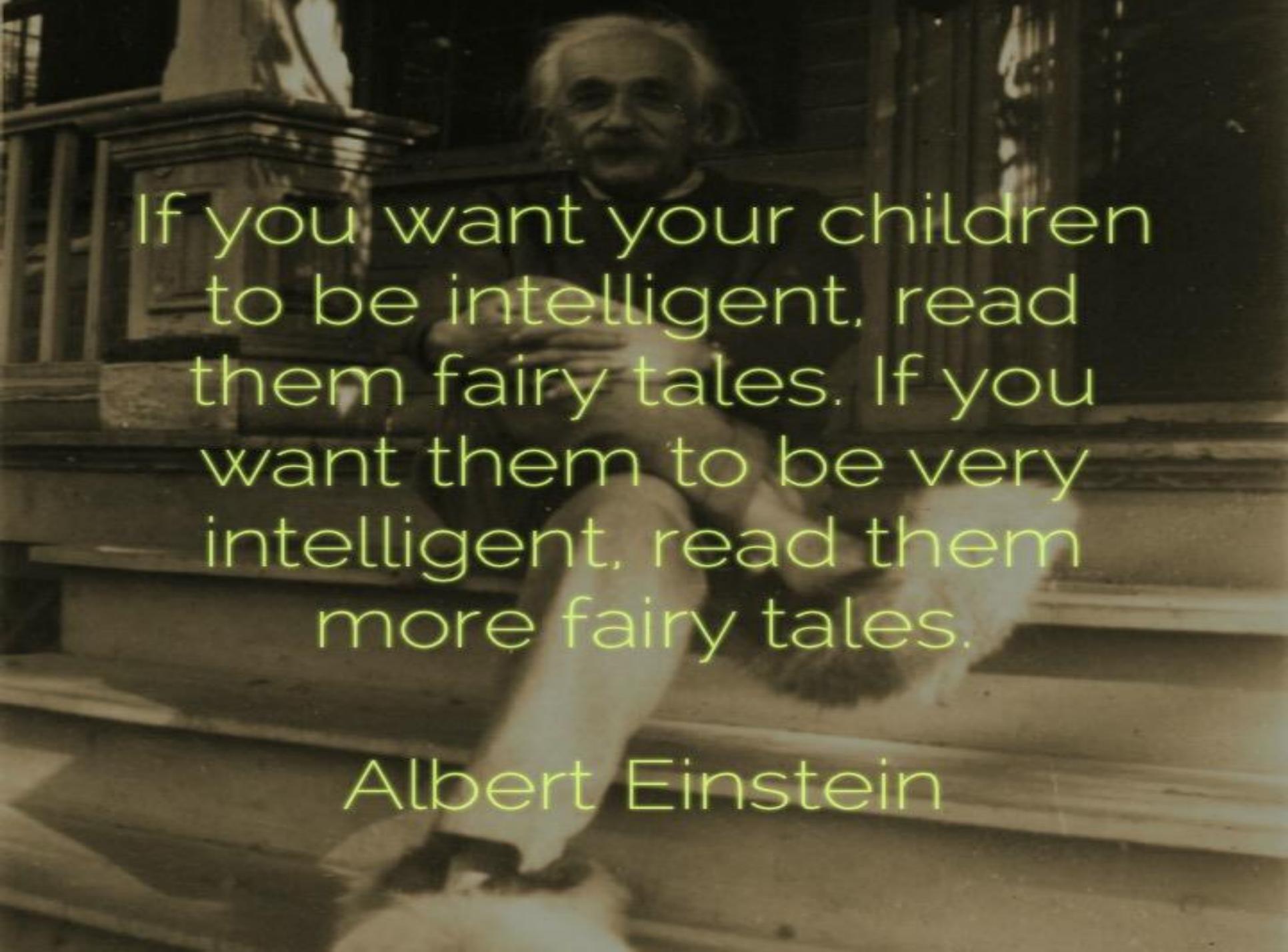


Top 10 Hit Song Algorithm

- >114 Beats
- 3 ½ minutes long
- Little bit dancey
- Chorus as soon as possible, before 1 minute.
- Repeated 3 note hooks.
- Theme- What's popular?
- Woah woah woah

Source - Brett Domino

Adam Chase @_geekyteacher

A black and white photograph of Albert Einstein sitting on a wooden bench. He is wearing a dark jacket and light-colored trousers, and has his characteristic wild hair. He is looking directly at the camera with a slight smile. The background is dark and out of focus, suggesting an indoor setting with architectural details.

If you want your children
to be intelligent, read
them fairy tales. If you
want them to be very
intelligent, read them
more fairy tales.

Albert Einstein

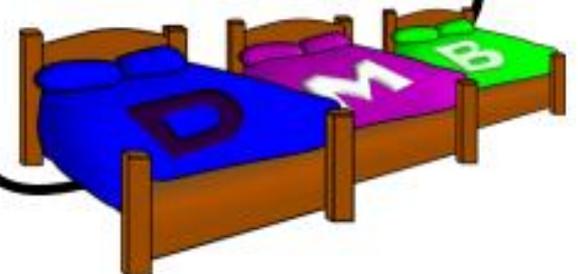
GOLDILOCKS AND THE 3 BEARS

FLAMINGTEXT.COM



Goldilocks and the Three Bears

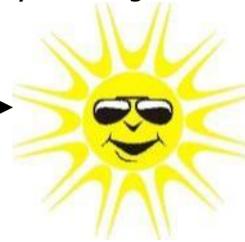
Story Map



Once upon a time...



One sunny morning...



First...



Meanwhile...



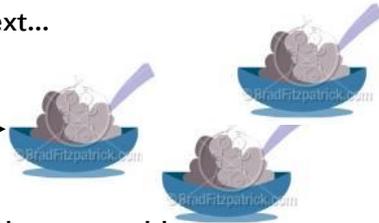
My porridge is too hot!

Too hard, too soft

Just right!



Next...



Too hot, too cold

Just right!

...so...

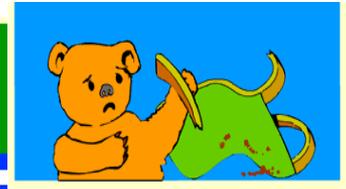


Then...



Who are you?

As quick as a flash...

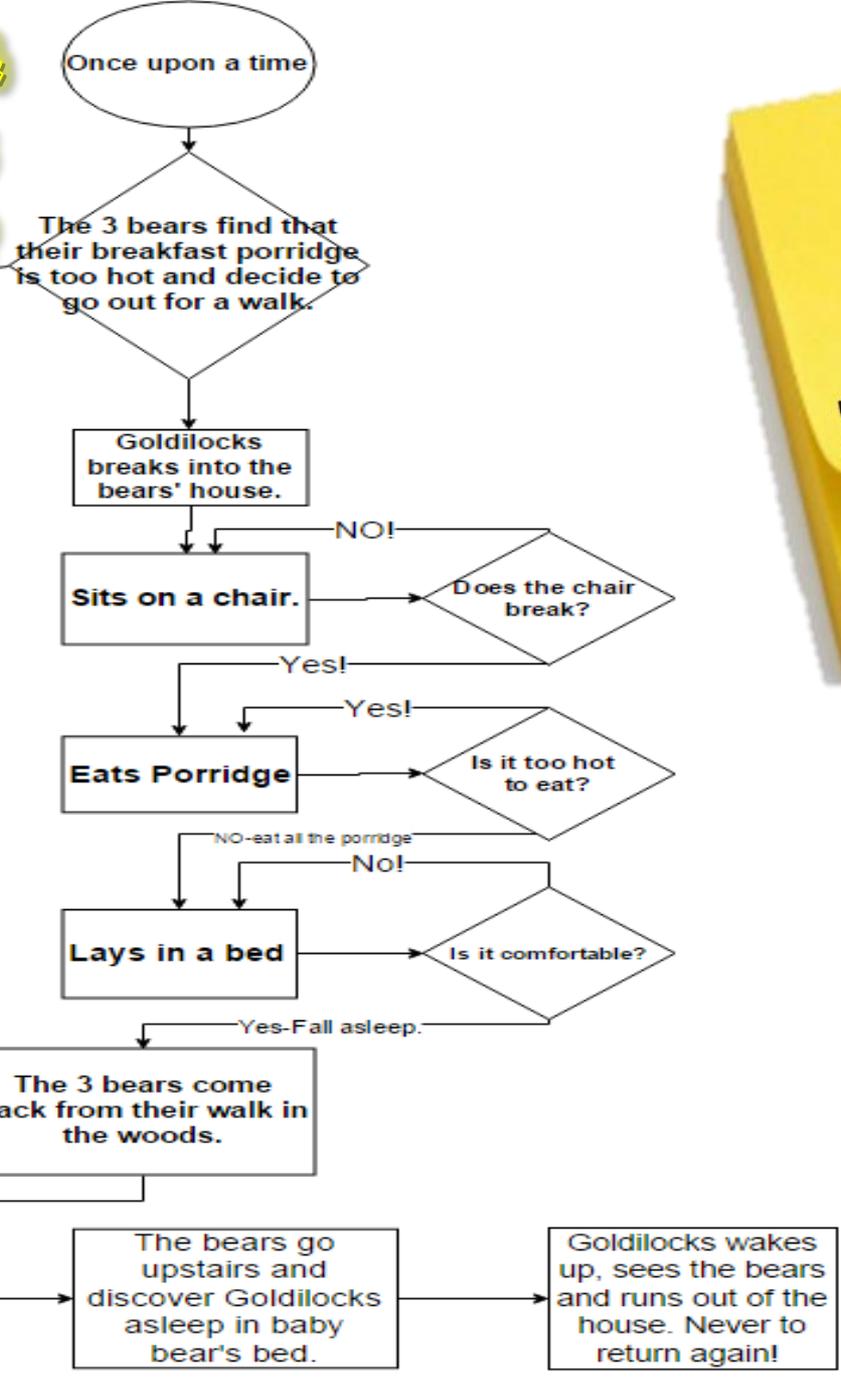


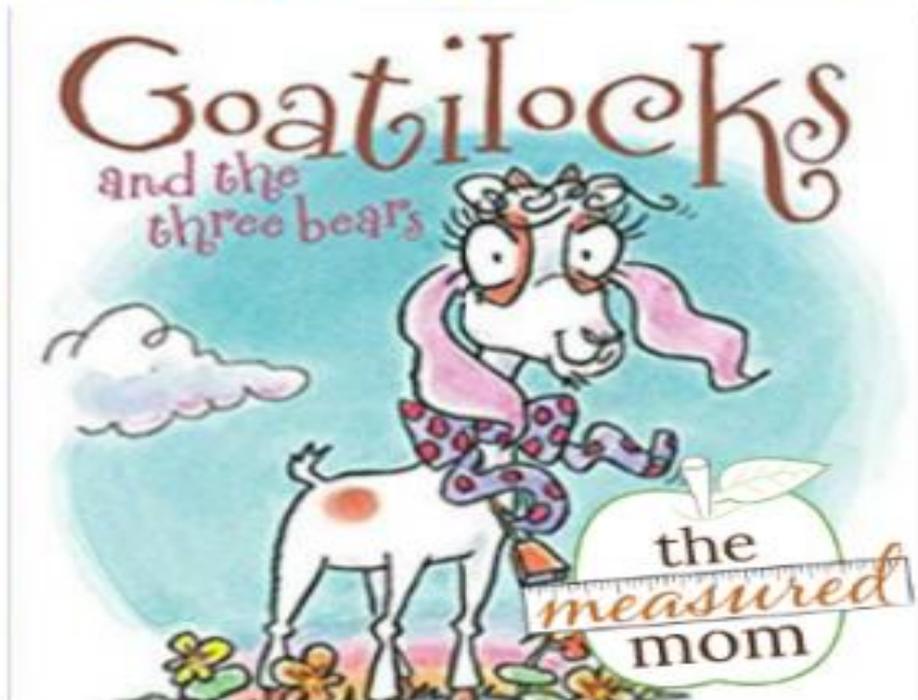
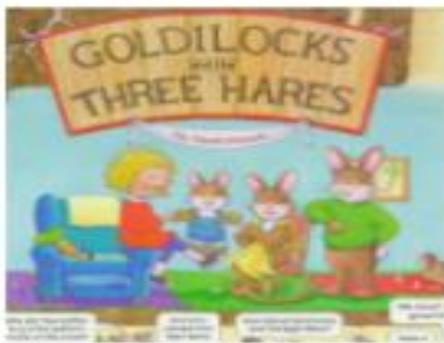
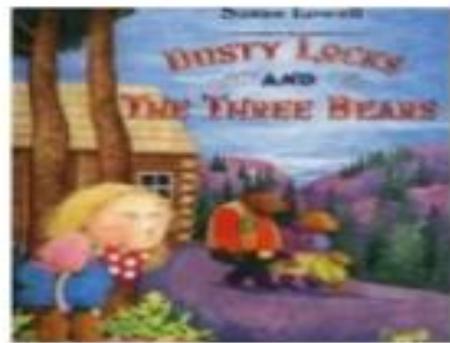
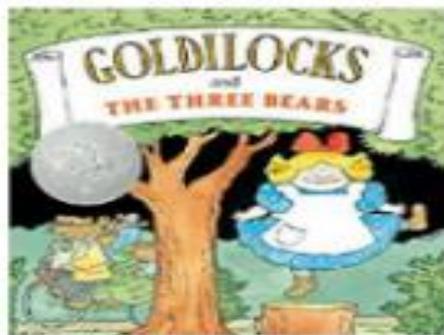
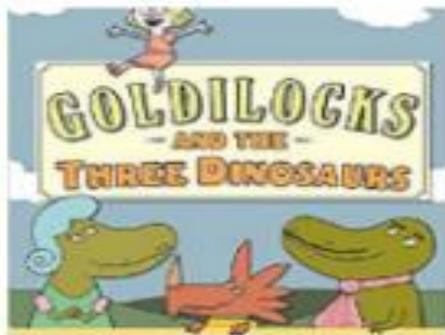
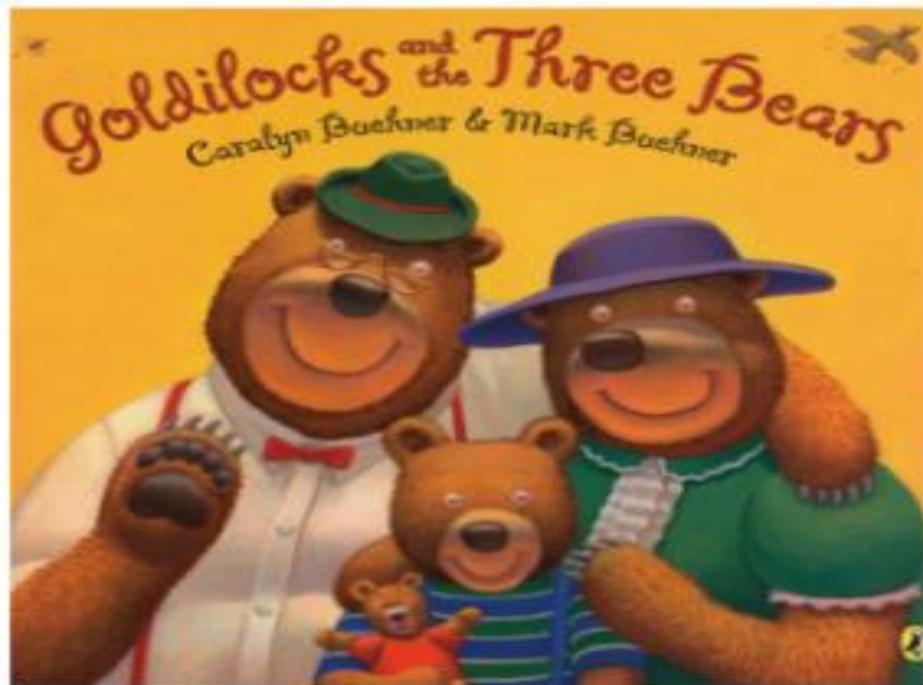
At that moment...



Goldilocks & the 3 bears Flow Chart

Bears are walking





How to catch Hansel and Gretel - A Witches Guide

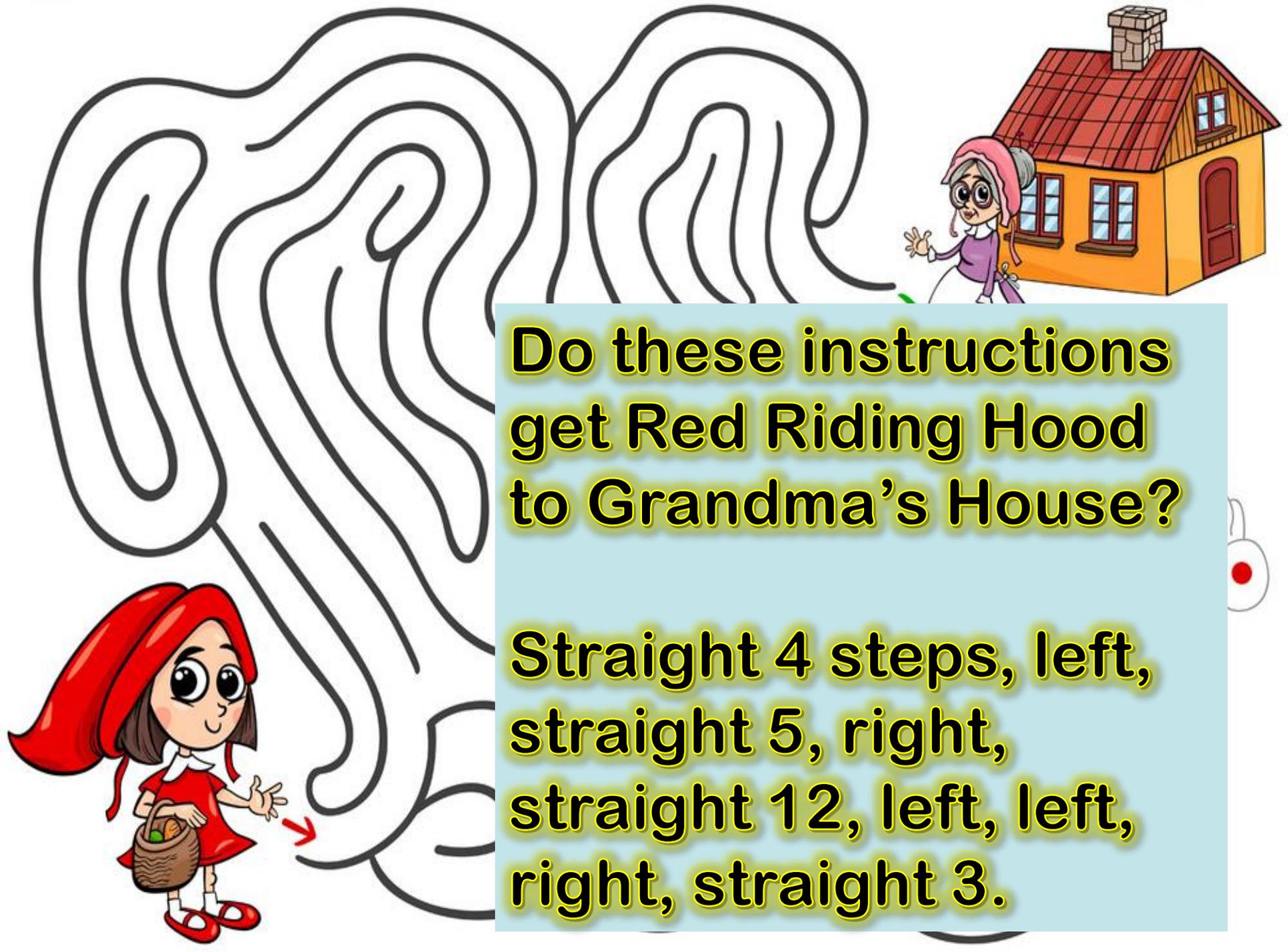
Instructions

1. Buy some sweets, chocolate, gingerbread and lollipops.
2. Stick them to your house.
3. Wait patiently for Hansel and Gretel to see your yummy house, the children will want to eat the delicious sweets.
4. Invite them in for dinner.
5. Fatten Hansel up to eat for your tea!



Things you will need:

1. Sweets, chocolate, lollipops.
2. Glue to stick them on.
3. A nice meal to give the children.



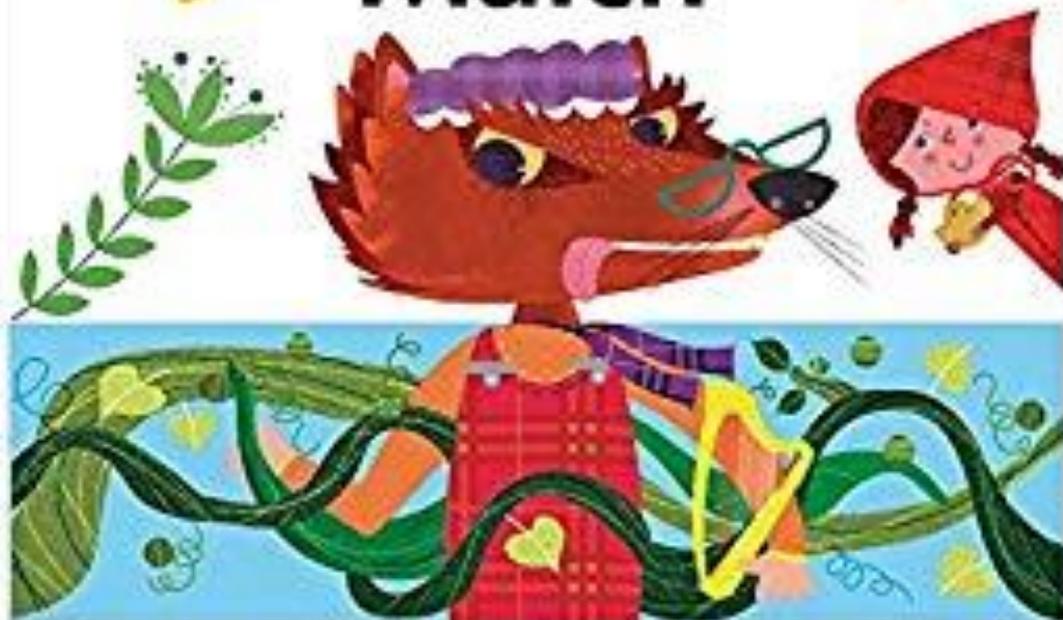
**Do these instructions
get Red Riding Hood
to Grandma's House?**

**Straight 4 steps, left,
straight 5, right,
straight 12, left, left,
right, straight 3.**



MUDDLE

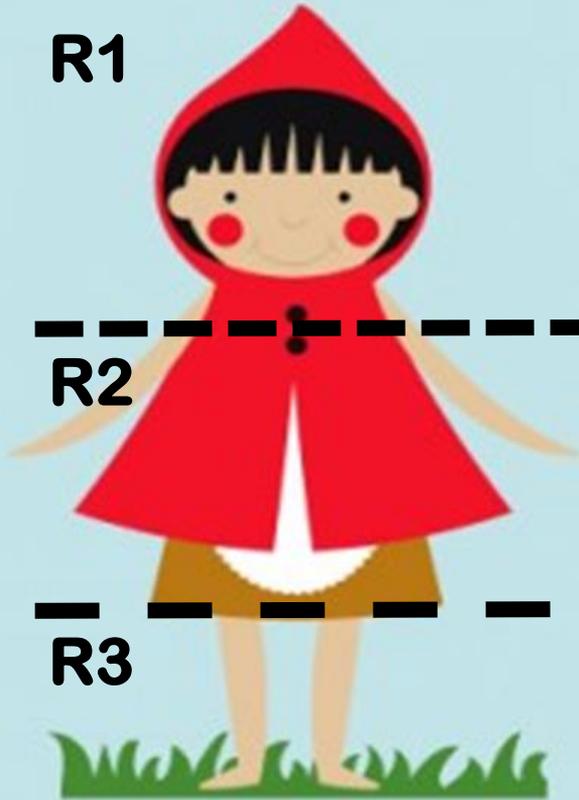
and
Match



Fairy Tales

A mix-and-match book!

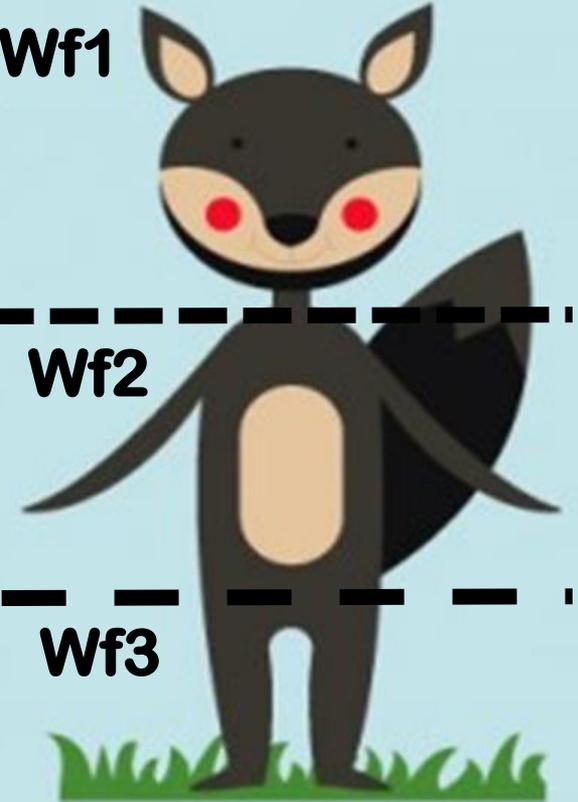
R1



Wt1



Wf1



R2

Wt2

Wf2

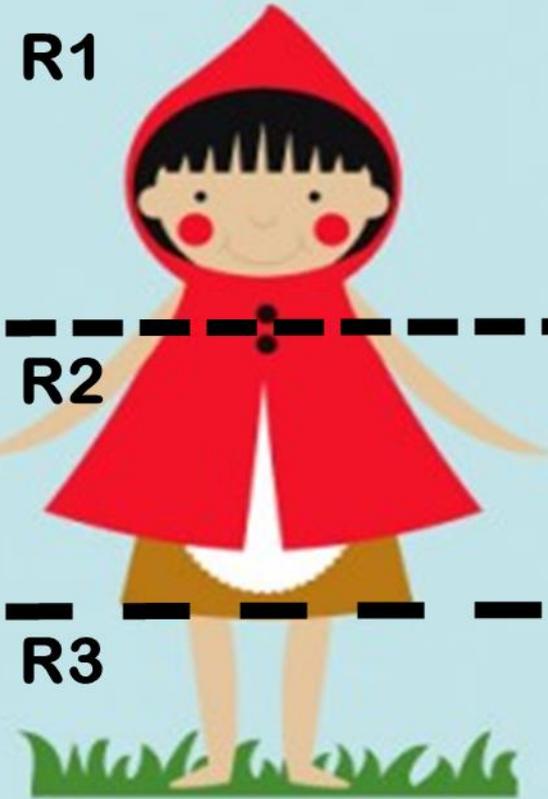
R3

Wt3

Wf3

Wt1, Wf2, R3

R1



R2

R3

R1, Wt2, Wf3

Big Bad Wolf



What the character is like

brown fur

big

mean

scary

sharp teeth

cruel

hungry

large mouth

ferocious

boy

girl

human

animal

What the character does

lives in the woods

blows down houses

eats grandmothers

scares people

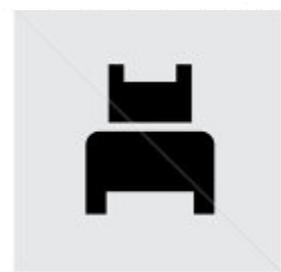
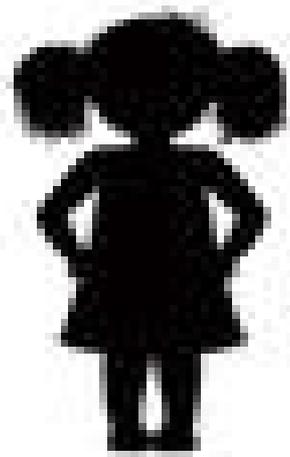
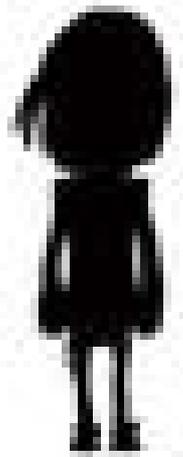
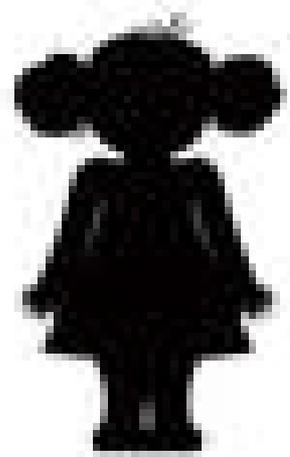
Big Bad Wolf

Circle the words that describe this character:



happy friendly clever
caring angry beautiful
rude handsome evil
helpful smart moody
honest ugly kind
wicked nasty scary
cross shy mean pretty
horrible sly polite
grumpy calm furious
unkind fierce bold

Icon Sets



Red Riding Hood



In Red's Basket-
bread, cheese and some milk.
ONLY FOR GRANDMA!



Red's House

A Fairy Tale infographic

A woodland is a habitat where trees are the dominant plant form. The individual tree canopies generally overlap and interlink, often forming a more or less continuous canopy which shades the ground to varying degrees.



Red walked 3 miles through the woods to Grandma's house.



Wolves are carnivores, or meat eaters. Grey wolves prey primarily on large, hooved mammals such as white-tailed deer, mule deer, moose, elk, caribou, bison, Dall sheep, musk oxen, and mountain goats. Medium-sized mammals, such as beaver and snowshoe hares, can be an important secondary food source.



The first use of the phrase "living very happy ever after" is found in 1853.



Grandma's House



@pddring

PROGRAM:

a list of instructions that tells a computer exactly what to do



bitsbox

j.mp/bitsboxedu



Draw a
crazy roller
coaster, then
watch it in
action!



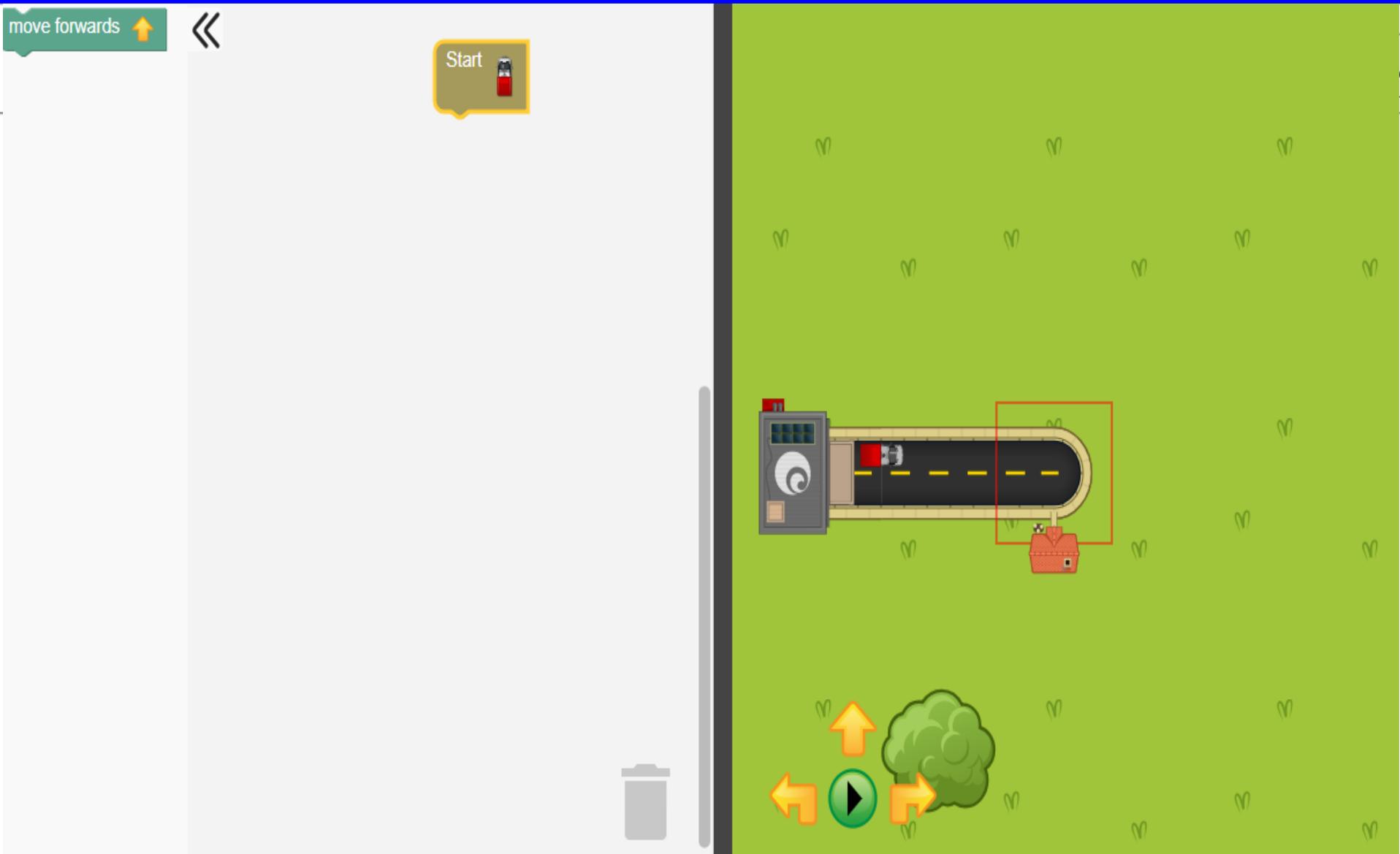
Roller
coaster

Keep your arms
and legs inside
the vehicle at
all times.



```
1 fill('amusement')
2 track = []
3 car = stamp('coastercar',200).hide()
4
5 function drag(info) {
6   beam = stamp('oval',x,y,50)
7   beam.rotate(info.angle+90)
8   line(x,1100,x,y,'gold')
9   track.push(bean)
10 }
11
12 function untouch() {
13   car.front()
14   car.show()
15   loop = rollercoaster
16 }
17
18 i = 1
19 function rollercoaster() {
20   next = track[i]
21   car.aim(next)
22   car.move(next.x,next.y)
23   i = i + 1
24   if (i == track.length) {
25     loop = null
26   }
27 }
```

j.mp/RapidRouter



jump/ks2code

Tutorials for beginners

Educator Notes



Write your first computer program

Code.org

Learn the basic concepts of Computer Science with drag and drop programming. This is a game-like, self-directed tutorial starring video lectures by Bill Gates, Mark Zuckerberg, Angry Birds and Plants vs. Zombies. Learn repeat-loops, conditionals, and basic algorithms. Available in 20 languages

Ages 6-106 | Modern browsers, smartphones, tablets

15,181,620 participants

<http://hourofcode.com/co>
Teacher's Notes

Go

uk.code.org/learn

Fun Theory





@ideas_factory



Julian S. Wood

**j.mp/
'Usefulcomputing
/compdance
/CompArt**