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July 2020

Week 13 #SolveItWithSTEM@Home Colouring and Experiment Pack

featuring Alice the STEM Guru

Keep in touch with your friends!

Find out what they have been up to that day.

Why not list the ways of communication you use when contacting friends...

-
-
-
-
-





Show your family what you have achieved each day and remember to ask them too!

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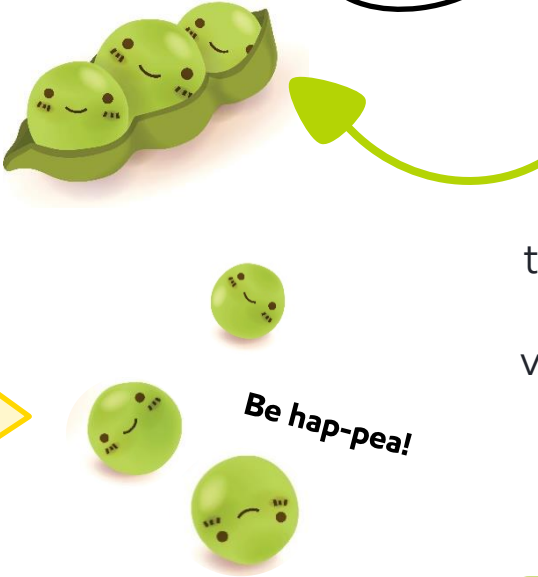
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STEM Stars: Gregor Mendel (1822 – 1884)



This week, we have another STEM star to share and celebrate! Check out our second STEM Star...

'It started with us!'



Why is Gregor Mendel a STEM Star?
Gregor's family had financial difficulties meaning he struggled to pay for his education. He also suffered from bouts of physical illness and depression

Johann Gregor Mendel, often called the "father of **genetics**," was a teacher, lifelong learner, scientist, and man of faith. Gregor was the first person to lay the mathematical foundation of science of genetics, in what came to be called Mendelism!



Gregor studied seven different features in peas, including height, flower colour, seed colour and seed shape and how these were 'passed down' or inherited by the next generation of peas. To do this, he took two completely different pea families (or lines) that had differing features, for example, one family of peas grew very tall versus another family which were very short. He grew each family of peas for many generations until they were pure-breeding (always produced offspring identical to the parent), then bred them to each other and looked at how the traits were inherited.

***Genetics:** We all look different, but we look the way we do because we inherit, or have characteristics (features) that we are born with. These physical characteristics or features are given to us by our parents.



Mendel's pea plants



In light of our STEM Star, Gregor Mendel, we have created the following activity using an online video.
In order to complete the questions below, please watch the YouTube video to find the answers!
YouTube video link: <https://youtu.be/Mehz7tCxjSE>
For all of our younger readers, you may like to watch the video and answer the questions with an adult!



1. What century do we need to go back to, to find out more about genetics?

.....

2. When working with peas, what did Gregor Mendel call the yellow colour trait?

D.....

3. What did Gregor Mendel call the 'hidden trait'?

R.....

4. What sort of square do they use to see how characteristics are descended?

P.....



Experiment #14: Genetics (Make sure you have an adult help you with this experiment)

1. Items required:

- Paper
- Two different coins
- Scissors
- Glue or tape
- Printer (optional)

2. Preparation:

- Print and cut out the head outlines found on page 8. If you are unable to print, please create own your faces.
- Print the genetics data table – which can be found on page 7. If you are unable to print, please copy the table onto a piece of paper.
- Print and cut out the dark hair facial features – which can be found on page 9. If you are unable to print, please copy the images and create your own. Depending on how the experiment turns out, you may need 2-3 copies of this page.
- Print and cut out the light hair facial features – which can be found on page 10. If you are unable to print, please copy the images and create your own. Depending on how the experiment turns out, you may need 2-3 copies of this page.

3. Creating a Parent:

- Flip the first coin to create the genetic profile for the mother. For each Trait listed on the Genetics Data Table, flip the penny twice and write the results in the mother column using a D for heads and an R for tails.
- Repeat the above step using the second coin, to create the genetic profile for the father. At this point, the mother and father columns will have a pair of genetic codes that describe some facial features for the mother and father.

For more information, why not check out
[Science Kids at Home](#)

4. Creating a Child:

The first coin will represent the gene from the mother and the second coin will represent the gene from the father.

1. Flip the second coin. If it is heads the child will be a boy, and if it is tails the child will be a girl. Write boy or girl under Child 1 on the Genetics Data Table.
2. Starting with the Hair Trait, flip both coins. Look at the first coin. If it is tails, take the first genetic code from the mother (D or R) for this trait and write that letter in the Child 1 column for Hair. If the first coin is heads use the second letter from the mother's genetic code. For example: If the mother has the code DR for hair and the first coin flip is a head, write a R in the Child 1 column.
3. Look at the second coin and apply the same rules to the Father's genetic code. That letter will complete the gene pair for the Hair Trait of Child 1.
4. Repeat steps 2 and 3 for each Trait of Child 1.

5. What does the Child look like?

Look at the code for Hair. If it reads DD, DR, or RD cut out the Dominate Trait of Hair (dark) from the dark hair features slide. If the code reads RR, cut out the Recessive Trait for Hair (light). Put it on one of the head shapes, and use a small piece of blue tack to hold it in place. Repeat step 1 for the each Trait. If the child should have freckles, use a marker to draw them on the face. You might want to use a flesh colored marker to color the nose too.

Using the same steps to create more children from this set of parents.

When you are finished with the first family, create a new set of parents using a second Data Sheet. Use this set of parents to create a new set of children.

Experiment #14: Genetics – Data Table

Data Table

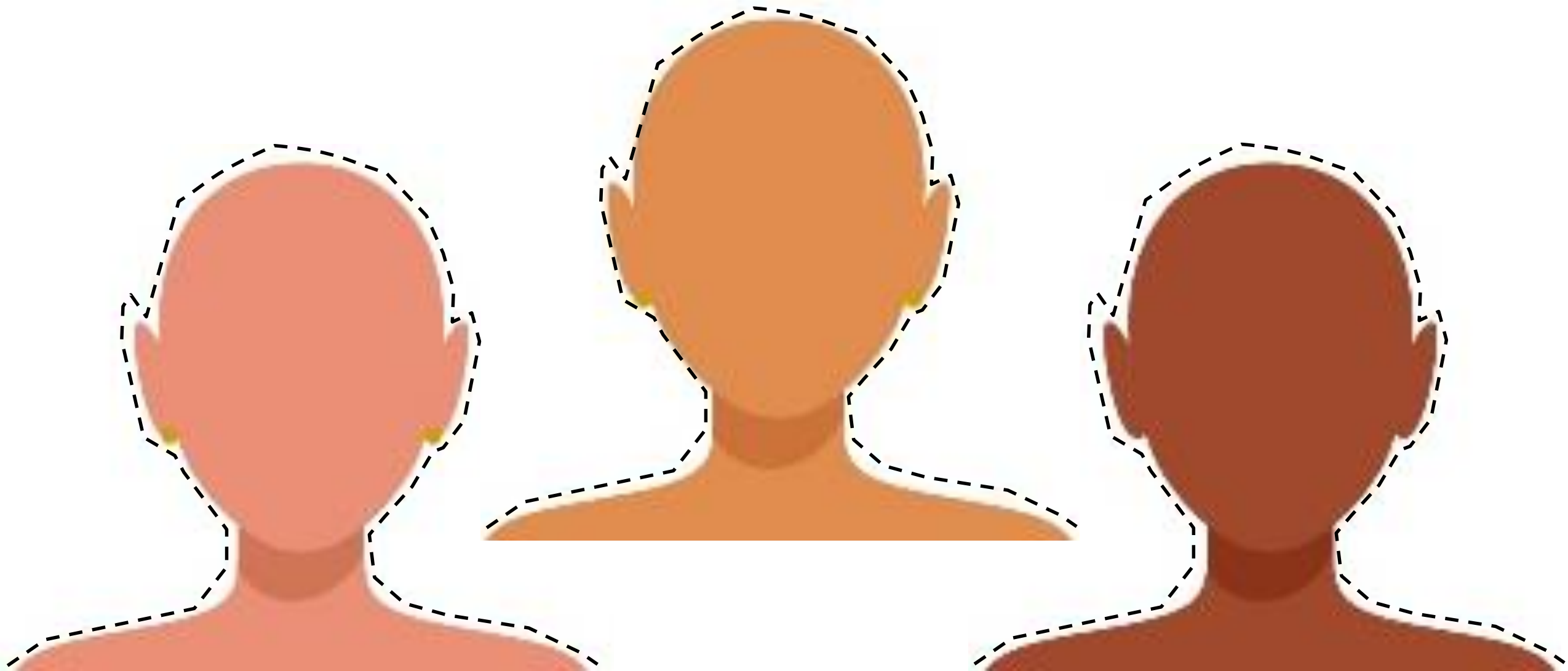
Trait	Dominant	Recessive	Mother (Mum)	Father (Dad)	Child 1	Child 2	Child 3
Hair	Black or Dark Brown	Blond or Red					
Eyes	Brown, Hazel or Green	Blue or Grey					
Eye Placement	Close	Far Apart					
Eye Brows	Bushy	Thin					
Mouth Size	Long	Average					
Nose	Pointed	Rounded					
Freckles	Yes	No					



There are many genetic traits. Just a few are shown in this table.



Experiment #14: Genetics – Head outlines



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Experiment #14: Genetics – Dark hair features



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Experiment #14: Genetics – Light hair features



Week 13 – Maths brain teaser!

$$\begin{array}{rcccl} \boxed{} & + & \boxed{} & = & 8 \\ & + & & & \\ \boxed{} & - & \boxed{} & = & 6 \\ = & & = & & \\ 13 & & 8 & & \end{array}$$

Work out what numbers would fit in the boxes!

Answers will be included in next week's pack.

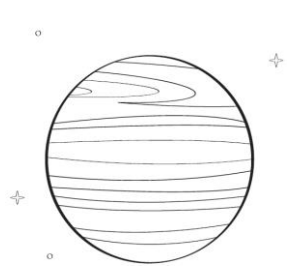
Hint: they may include decimal points...

Answers Page for Week 12 Infant/Primary Pack

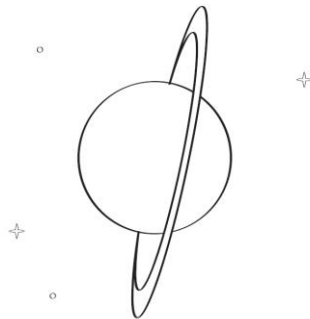
Exercise Colouring Slide (Page 3)

Carrots, Water, Spinach, Rice, Fish, Apples, Eggs
Bananas, Broccoli, White Meat, Wholemeal Bread

Guess the Planets Slide (Page 5)



VENUS



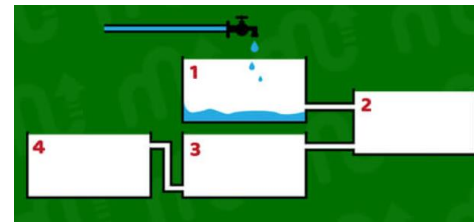
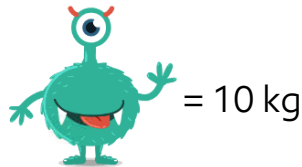
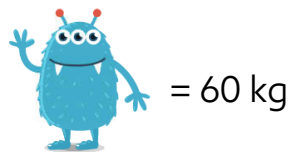
URANUS



MERCURY

Here are the answers for Week 12
we will include the answers for
Week 13 next week!
Keep up the good work 😊

Maths Brain Teasers Slide (Page 8)



The first tank to fill up will be the third one, then the fourth and further the second and the first.



We hope you enjoyed the Week 13 activities.

Week 14 will be coming soon.

Just to let you know, Week 14 will be our last #SolveItWithSTEM week as we take a break during the Summer Holidays – we hope you have found the packs fun and educational! Keep an eye out for new packs next term!

Best wishes

The ExxonMobil Fawley #SolveItWithSTEM Team!