Renaissance Fair, Michaelmas Term, Block One, Physiology, Day One

Welcome the Day

Morning Verse (by Rudolf Steiner)

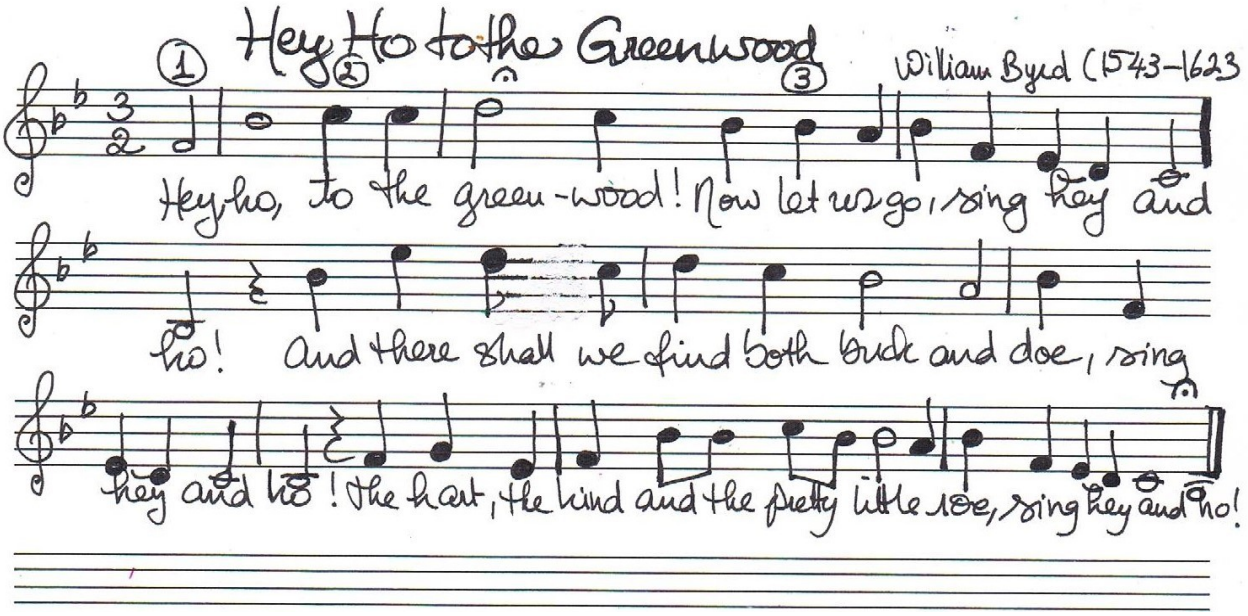
I look into the world
Wherein there shines the sun'
Wherein there gleam the stars,
Wherein there lie the stones.
The plants they live and grow,
The beasts they feel and live,
And man to spirit gives
A dwelling in his soul.
I look into the soul
That living dwells in me.
God's spirit lives and weaves
In light of sun and soul,
In height of worlds without,
In depth of soul within.
To Thee, o Spirit of God
I seeking turn myself
That strength and grace and skill
For learning and for work
In me may live and grow.

Intimations of Immortality (by William Wordsworth)

Our birth is but a sleep and a forgetting:
The soul that rises with us, our life's Star,
Hath had elsewhere its setting,
And cometh from afar:
Not in entire forgetfulness,
And not in utter nakedness,
But trailing clouds of glory do we come
From God, who is our home.

Hey, Ho, to the Greenwood!

Hey, Ho, to the Greenwood!
Now let us go, sing hey and ho!
And there shall we find both buck and doe,
sing hey and ho!
The hart, the hind and the pretty little roe,
sing hey and ho!



~Recorder Practice

~Morning Exercises

Let us recap percentage a little. You remember that 'Per-cent' means 'out of 100'

The sign % stands for 'percent' which means 'out of 100'.
So:

- *40% means 40 out of 100*
- *11% means 11 out of 100*

So if 50% means 50 out of 100 ~ it means it's 'half of the whole

And if 25% means 25 out of 100 ~ it means it's 'a quarter of the whole

Can you describe 75% in that way?

And 20%?

And 10%?

~Main Lesson

The first three week block of this year is Human Biology. There will be two blocks (the second one is next term). This first one is called Health and the Human Body.

Begin by reading and discussing chapter one, 'Uprightness and the Spine' from Charles Kovacs' book 'Muscles and Bones'.

He writes so beautifully, and has such a wonderful view on how the body serves us so well. As he wrote his books a long time ago, language (and political correctness) has changed somewhat over the years. Instead of feeling offended by it, why don't you use the opportunity for discussion ~ it'll be a worthwhile endeavour.

Also, take a few notes while you are listening to the chapter ~ they will help you when you write your summary tomorrow.

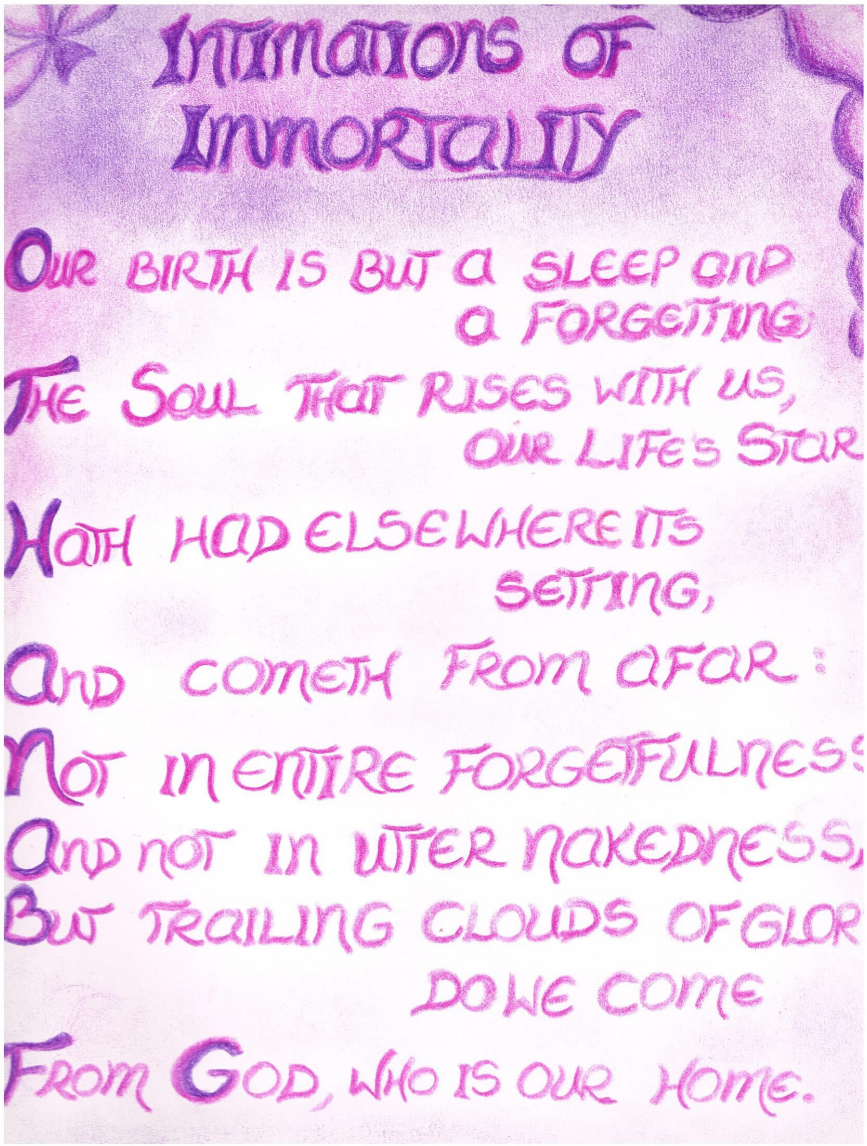
Now prepare your new main lesson book. Write a beautiful, artistic title on the front:

Human Biology

and your name at the bottom.

Then, on page one, let's write a part of 'Intimations of Immortality' by William Wordsworth. And decorate it artistically.

Our birth is but a sleep and a forgetting;
The soul that rises with us, our life's star
Hath had elsewhere its setting,
And cometh from afar:
Not in entire forgetfulness
And not in utter nakedness,
But trailing clouds of glory do we come
From God, who is our home.



Then start a contents page on page two: write CONTENTS at the top in the middle, and PAGE at the top right corner ~ do remember to fill in every new title and its page number.

~Story Time

Read pages 179 to 184 (The Crusades), in ''The Book of the Middle Ages'' by Dorothy Mills

~Snack Time & Break

~Painting/Art

Today, let's take our paints outside and paint a beautiful landscape ~ just copying from nature. Maybe you know a beautiful spot, not too far from home, where here is a bit of a view.
Remember to take with you:
paints, paint brush, water jar, a paint board (unless you have a stiff pad of aquarelle paper) and, maybe a few water soluble pencils (in case you want to sketch a few details first) ~ optional.
So, when you are in a good spot, settle down and decide on the scene you want to paint. In your mind's eye, imagine a sort of frame around the scene; that's the perimeter of your painting.
If you do want to sketch a few details to get the proportions right, do this now: How far down do you want the sky to come? Where are the hills and trees?
Then begin by painting the sky quite gently ~ you can always go back to it later and make the colours stronger.
Then paint the green of the tree tops... and work your way down.
The brown tree trunks and branches come last.
Lovely!
Take care when carrying your painting ~ we wouldn't want to smudge your work of art! Here is mine:

Renaissance Fair, Michaelmas Term, Block Two, Middle Ages

Day Three

~Welcome the Day

~Recorder Practice

~Morning Exercises

Read the play 'Eleanor of Aquitaine' in roles together. Act out some of the scenes. Concentrate on the three scenes of the first act, this week.

~Main Lesson

Read the following description of castles, then draw a castle and, tomorrow, write the various names of its parts (and other notes) on it.

Life of the Castle

When you visit France, Germany, and other European county today, you will find the ruins of massive stone castles everywhere, rearing their tall towers on the hilltops, and commanding the passage of roads and rivers. They are mostly tumbled down, and overgrown with moss and ivy, and nobody cares to live in their dark walls. But in the Middle Ages they were the safest places in which to live; so in spite of their cold and gloom, they became the centres of the life of the time. It was from the castles that the feudal barons ruled their lands and where people found refuge from the attacks of the Northmen and Hungarians. It was from the castles that the Crusaders set out for the Holy Land. In them, chivalry was born and flourished; at their gates tournaments, jousts, and other knightly festivals took place; and in their halls the wandering singers, who were building up a new literature, found the readiest welcome and the most eager and appreciative listeners.

In the eleventh and twelfth century, we would have found great thick forests stand where now there are flourishing towns; and everything has a wilder, more unsettled look.

Take castle in France, for example, was built by one of the vassals of William the Conqueror, and has been the scene of many sieges and battles. Everything is arranged so as to make easy its defence. It is built on the top of a steep hill; and around its walls a deep ditch or moat is dug. At the outer edge of the moat, there is a strong fence or palisade of heavy stakes set in the ground. Just inside this is a path, along which the sentries march in time of war. The gate, too, is doubly and triply guarded. In front of it is a drawbridge across the moat, indeed, there are two; and the space between is guarded by a protecting wall. In later days these drawbridges were made stronger and more complicated, and heavy towers with walls of masonry were built, the better to protect the entrance.

When one had passed these outer works, one comes to a heavy wooden door between two tall towers which mark the entrance to the walls. One passes through this, and stands in the gateway. But one is still far from being in the castle. In the narrow vaulted passage-way, one sees, suspended, a heavy iron grating, called the portcullis, which may come rattling down at any moment to bar ones passage. And

beyond this is another door; and beyond this another portcullis. The entrance to the castle is indeed well guarded; and the porter who keeps watch at the gate, and has to open and shut all these barriers, is at times a busy man.

At last one is past the gateway, in an open courtyard. The thick walls of the castle surround one on all sides, and at their top are the battlements and loopholes through which arrows may be shot at the enemy. Here and there the wall is protected by stone towers, in which are stairways leading to the battlements above. In the first courtyard are the stables, where the lord of the castle keeps his horses. Here, too, is space for the shelter of the villagers in time of war; and here, perhaps, is the great brick oven in which bread is baked to feed the lord and all his followers.

Going on, one comes to a wall or palisade, which separates the courtyard from the one lying beyond it. Passing through a gateway, we come into the second courtyard. There are the storerooms and cellars, where provisions are kept to enable the dwellers in the castle to stand a siege. Next to this is a building shaped like a great jug, with a large chimney at the top, and smaller ones in a circle round about. This is the kitchen, in which the food is cooked for the lord of the castle and his household. The cooking, is usually simple, most of the meats being roasted on spits over open fires, and elaborate dishes, with sauces and spices, being unknown. Most castles have, in addition, a small church or chapel in this courtyard, in which the inhabitants may worship.

The most important building of all is still to be described. There, at the end of the courtyard, is the tall "keep" of the castle, which the French called "donjon," and in whose basement there are "dungeons" indeed, for traitors and captured enemies. This is the true stronghold of the baron, and it is a secure retreat.

Think of all the hard fighting there must be before the enemy can even reach it. The drawbridges must be crossed, the gates must be battered down, and the portcullises pried up; the first courtyard must be cleared; the dividing wall must be carried; the second courtyard also must be cleared of its defenders. And when the enemy, bruised and worn, at last arrive at the keep, their work is just begun. There the lord and his followers will make their last stand, and the fighting will be fiercer than ever.

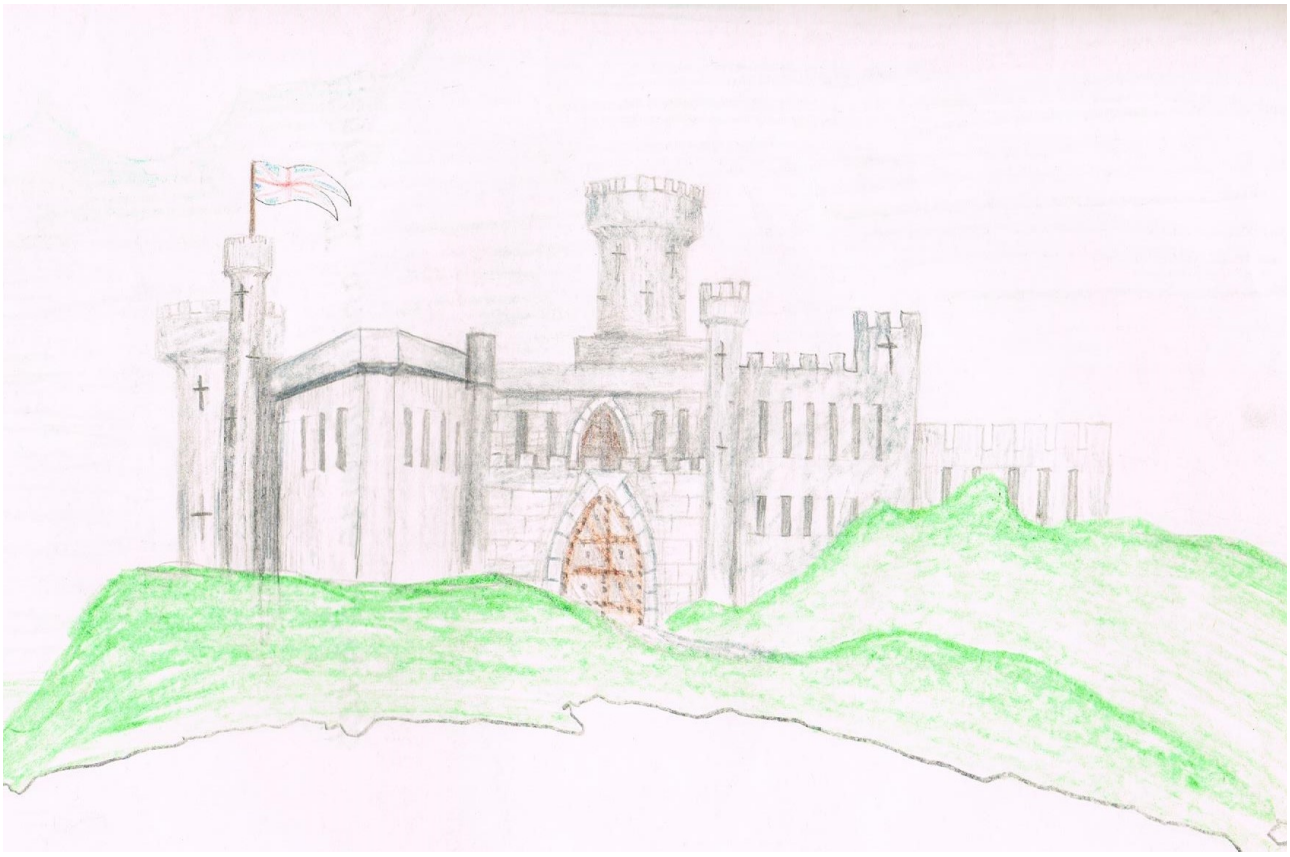
The walls of the keep are of stone, eight to ten feet thick; and from the loopholes in its frowning sides peer skilled archers and crossbowmen, ready to let fly their bolts and arrows at all in sight. A long, long siege will be necessary, to starve out its defenders. If this is not done, movable towers must be erected, battering rams placed, stone-hurling machines brought up, blazing arrows shot at the roof and windows, and tunnels dug to undermine the walls. In this way the castle may be burned, or an entrance at last be gained. But even then there will be fierce fighting in the narrow passageways, in the dimly-lighted halls, and on the winding stairways which lead from story to story. It will be long, indeed, before the lord's banner is torn from the summit of the tower, and his enemy's is placed in its stead! And even when all is lost, there still remain hidden stairways in the castle walls, underground passages opening into the moat, and the gate in the rear, through which the lord and his garrison may yet escape to the woods and open fields; and so continue the battle another day.

But what of the castle in time of peace? Where and how does the lord and his household live? How are his children educated? And with what do they amuse themselves in the long days when there is no enemy to attack their walls, and no distant expedition in which to engage?

Sometimes the lord and his family live in the upper stories of the huge donjon, where arms and supplies are always stored. But this is so gloomy, with its thick walls and narrow windows, that many lords build more comfortable "halls" in their courtyards, and prefer to live in these. Let us look in upon such a "hall," whether it is in the donjon, or in a separate building. There we find a great wide room, large enough to hold all the inhabitants of the castle, when the lord wishes to gather them about him. This is the real centre of the life of the castle. Here the lord eats and sleeps; here the great banquets are given; here he receives his vassals to do homage; here he plays chess and backgammon with his companions; and here in the evening the inmates gather, perchance to listen to the songs and tales of wandering minstrels.

Within the castle are many people, occupying themselves in many ways. In the courtyards are servants and dependants caring for the horses, cooking in the kitchen, and busily engaged in other occupations. Elsewhere are those whose duty it is to guard the castle, the porter at the gate, the watchman on the tower, and the men-at-arms to defend the walls in case of attack. Besides these we see many boys and young men who are evidently of too noble birth to be servants, and yet are too young to be warriors. Who can they be?

These are the sons of the lord of the castle, and of other lords, who are learning to be knights. Their training is long and careful. Until he is seven years old, the little noble is left to the care of his mother and the women of the castle. At the age of seven his knightly education begins. Usually the boy is sent away from home to the castle of his father's lord, or some famous knight, there to be brought up and trained for knighthood.



~Story Time

Read pages 257, ¾ down the page, to 261 (Medieval Education), in ''The Book of the Middle Ages'' by Dorothy Mills.

~Snack Time & Break

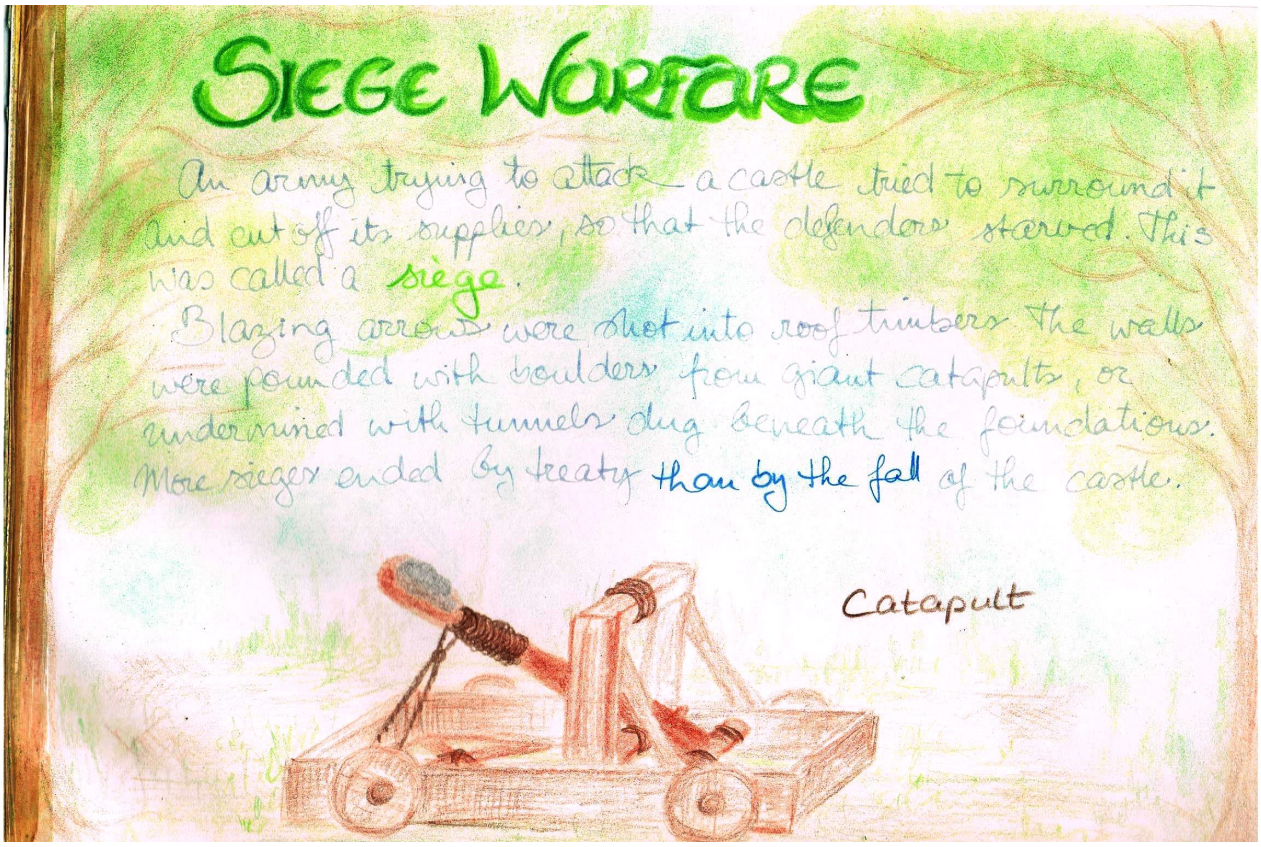
~Handwork

We'll sew the bib today.

Hem three sides of the bib:

Turn each side under 1/4" and iron or stitch.

Turn each side under 1/4" again and stitch.



Renaissance Fair, Michaelmas Term, Block Three, Mathematics

Day Fifteen

~Welcome the Day

~Recorder Practice

~Morning Exercises

Work more on your calligraphy project and, hopefully, complete it.

~Main Lesson

Here are some more equations like the ones we did yesterday:

8x – 1 = 9 + 3x

-x – 8 = -9x -2

-5x + 2x = -8 -5x

4 = 9x + 5

5x + 5x = 5x + 4

1 – 4x = 8x – 4x

9x – 8 = -4x + 3x

4 + x = -9 + 1

~Story Time

Read chapter XIV. 'The Vikings Sail The Northern Seas' of 'A Book of Discovery' by M.B. Synge.

Answers:

$$8x - 1 = 9 + 3x$$

$$8x - 3x = 9 + 1$$

$$5x = 10$$

$$x = 10/5$$

$$x = 2$$

$$-x - 8 = -9x - 2$$

$$-x + 9x = -2 + 8$$

$$8x = 6$$

$$x = 6/8$$

$$x = \frac{3}{4}$$

$$-5x + 2x = -8 - 5x$$

$$-5x + 2x + 5x = -8$$

$$2x = -8$$

$$2x = -8$$

$$x = -8/2$$

$$x = -4$$

$$4 = 9x + 5$$

$$-9x = 5 - 4$$

$$-9x = 1$$

$$-x = 1/9$$

$$x = -19$$

$$5x + 5x = 5x + 4$$

$$5x + 5x - 5x = 4$$

$$5x = 4$$

$$x = 4/5$$

$$1 - 4x = 8x - 4x$$

$$-4x - 8x + 4x = -1$$

$$-8x = -1$$

$$-x = -1/8$$

$$x = 1/8$$

$$9x - 8 = -4x + 3x$$

$$9x - 4x - 3x = 8$$

$$10x = 8$$

$$x = 8/10$$

$$x = 4/5$$

$$4 + x = -9 + 1$$

$$x + 9x = 1 - 4$$

$$10x = -3$$

$$x = -3/10$$

~Snack Time & Break

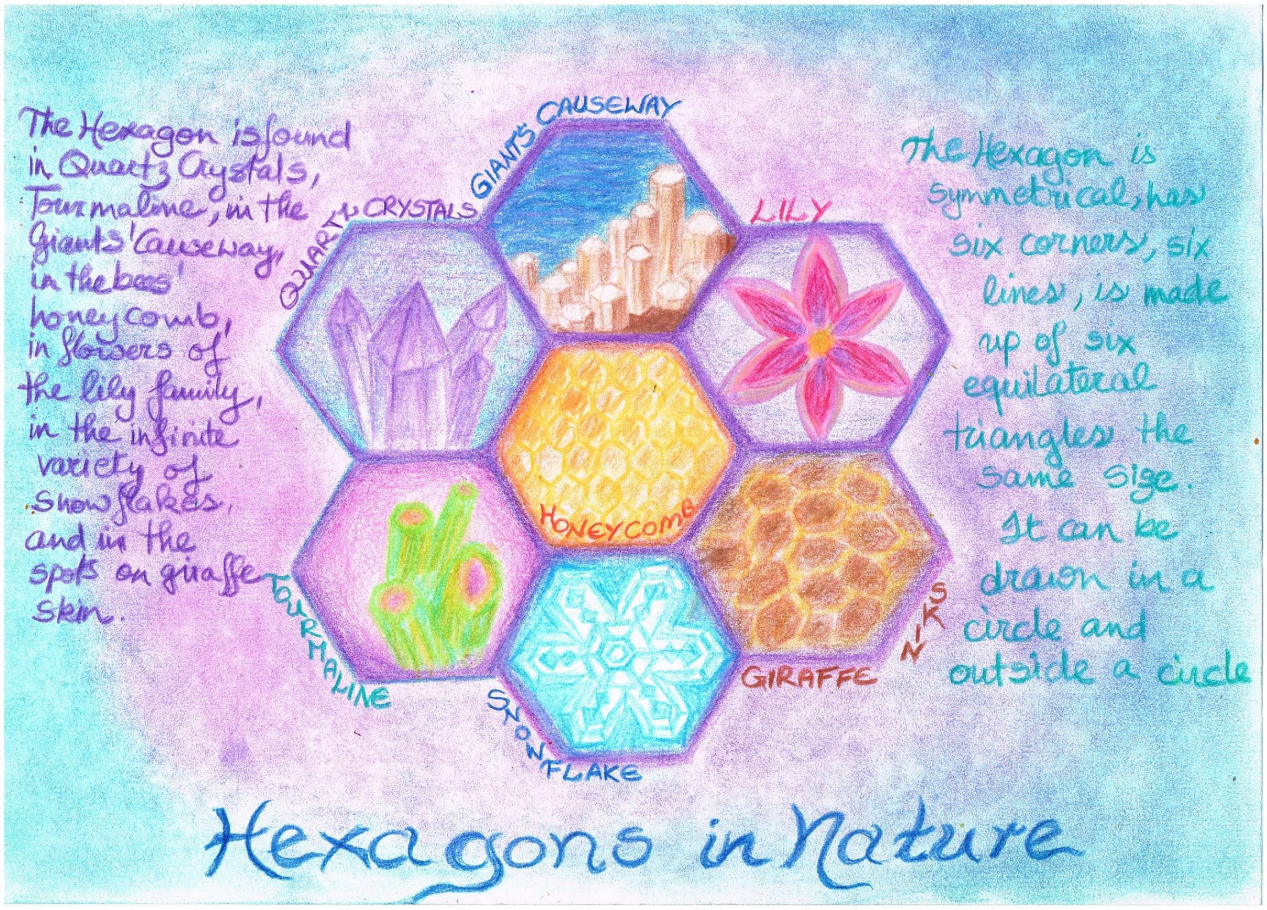
~Geometry in Nature

Let's look at another phenomenon in nature: what can you think of, in nature, that has six sides, or six corners?
The snowflake (although most people make them four- or eight-sided because they don't know how to construct a six-pointed one).

The honeycomb

What else?

Have a look at the drawing below and discover more.
Then do the drawing in your geometry book ~ or, change it, if you think of something else that is six-pointed.


The Hexagon is found in Quartz Crystals, Tourmaline, in the Giants' Causeway, in the bees' honeycomb, in flowers of the lily family, in the infinite variety of snowflakes, and in the spots on giraffe skin.
GIANTS' CAUSEWAY
QUARTZ CRYSTALS
LILY
HONEYCOMB
TOURMALINE
SNOWFLAKE
GIRAFFE
SPOTS
The Hexagon is symmetrical, has six corners, six lines, is made up of six equilateral triangles the same size. It can be drawn in a circle and outside a circle
Hexagons in Nature

Renaissance Fair, Michaelmas Term, Block Four, Geography I

Day Five

~Welcome the Day

~Recorder Practice

~Morning Exercises

We are practising our times tables again.

Write the six-times-table and the fifteen-times-table on the prepared sheets and practise them. Ask each other questions about them.

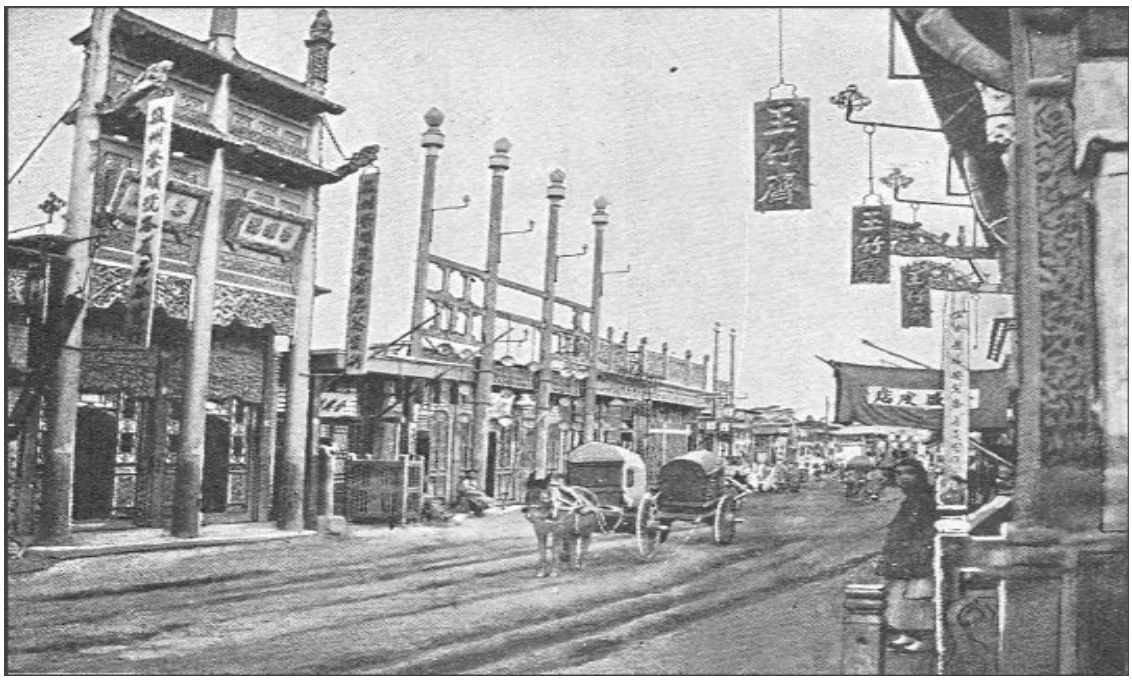
~Main Lesson

Remember to have the map of China open, and to take some notes for the summary.

A Chinese City
The first thing that strikes a foreigner in a Chinese city is the streets. They are exceedingly narrow, are paved with stone slabs, and there are no pavements. These slabs are wonderfully irregular, because the Chinese think it unlucky to put them down evenly. The houses are packed as closely as possible, and are generally of one story. There are no public squares, gardens or parks. The only open spaces are those found in front of the temples.

Beijing ~ now...

...and then



Signboards and advertisements are seen everywhere. The houses are low, but there are signboards eight or ten feet long. The Chinese do not put them up lengthwise, as we do, but hang them down; because they do not write from left to right, but from top to bottom. Every store has a name, generally a high-sounding one. Here is a coal dealer. Those two characters are the name of his store. They signify in plain English: Heavenly Ornament. That does not mean that coal is a heavenly ornament, but that the owner is modest enough to think he is. Across the street is an undertaker whose sign reads: United and Prosperous. That fur merchant yonder seems to be satisfied with himself, for he calls his place of business: Virtuous and Abundant.

The streets are too narrow and the roads too uneven for carriages. There is no opportunity to take a ride, but when we are tired of walking, we can hire a sedan chair. The officers and wealthy Chinese have handsome ones, but those for hire at the street corners are very shabby. Most of them are made of bamboo, and look as if they would break down if a man of ordinary weight were to sit in them. It seems almost impossible for two chairs to pass in these crowded, narrow streets. But they do, and you can hear the coolies shout: "Look out for your backs! Look out for your backs!". There are also queer-looking wheel-barrows that are made so that two people can sit on them and be trundled along by a coolie. They are all busy ~ you do not see any ladies out shopping, nor gentlemen walking in the streets. But you see hundreds of coolies, some carrying baskets of rice, others buckets slung from the ends of a pole, and filled with river or well water, which they sell to their customers. Water pipes and taps are luxuries which these people do not possess.

Then follows the handsomely decorated sedan chair of the Mandarin, in his fine robes of satin. His umbrella-bearer comes right behind the chair.
The streets are narrow enough, yet at both sides are stalls or booths occupied by travelling tradesmen. In one of these a tinker is busy mending some old iron ware; next to him is a physician who seems to be recommending his medicine to the crowd around him. Opposite him, in quiet contemplation of his wealth, sits the money-changer. His capital does not seem to exceed five dollars, but probably he does not care to display any more. Some of these poor-looking money-changers would astonish us considerably if they could be made to tell us of the sums of money they control.
There is a man in a loose yellow robe who is a begging priest. As he walks along he strikes a wooden drum fastened around his waist. It makes a dull and hollow sound. Such drums are used in the temples while the priests are chanting their prayers. The Chinese are taught that if they give alms to these begging priests it will help them in the afterlife. What they give is dropped in the small wallet or satchel which you see strapped on the back of the priest.
There is a florist's shop. Here comes the shop keeper with several shallow bamboo baskets filled with fine plants. In early spring he sells the sweet-scented flowers of the lamei and the pretty pink blossoms of the almond. Later on in the season, he has azaleas, roses, pinks, and peonies, pomegranates, and water lilies. In early fall the brilliant coxcombs, with their large flowers, are the favourite. The Chinese are fond of the chrysanthemum, the passion flower, and the aster. The sweet scent of the Kwei-wha, or fragrant olive, is very pleasant, especially among the vile odours of a Chinese street.
An open space shows that we are near a Yamen, or judge's office. There are stone lions guarding the gate. The Chinese believe that they are stone lions only in the

daytime but that at night they come to life and roam through the streets of the city.

Here is a man walking along with two large and deep bamboo baskets slung from a pole, and a little flag with the characters: "Respect printed paper!" They seem to expect him in this street, for doors open and menservants come out with waste-paper baskets, which they empty into his. What do you think he will do with these scraps? He is paid by a society to gather them, and they are sent to a temple where there is a furnace to burn them. The Chinese have the greatest respect for learning, and think it is a shame to treat written paper with disrespect. They can not understand how we can step upon it in the street, or use it to wrap parcels in. They think that we can not have any good writers, because we care so little for written or printed paper.

Now let us go into this handsome. When we have enter crockery store, a servant comes and offers us a cup of tea. Those vases, some of them five feet high and painted in delicate colours, are very expensive. You may take your choice of wine pots, teacups, and articles which we use, such as tea sets with handles to the cups, teapots, plates, dishes, etc. Offer the shop-man about one-half of the price he asks. Never fear! he will take it, and make a good profit. He would be greatly disappointed if you were to pay him his own price, for then he would blame himself for not asking twice as much. A Chinese storekeeper loves to bargain.

Next door, there is a tea-house. This is the place where the Chinese meet their friends. They drink tea, and nibble at peanuts and melon seeds, and talk over the news of the day. They will sit here for hours, and when they leave and pay the bill, it is about ~ one penny!

What are the names of the streets we have passed? I will tell you. We began with that of Perpetual Comfort, then we passed through Filial Piety Lane, and turned into the Court of Eternal Harmony; where we saw the Judge's Yamen. Afterwards we went through New Street, Horsetail Lane, Thread-and-Needle Alley, the Street of Heavenly Treasures, and now we are in the Chia Family Street, which leads to

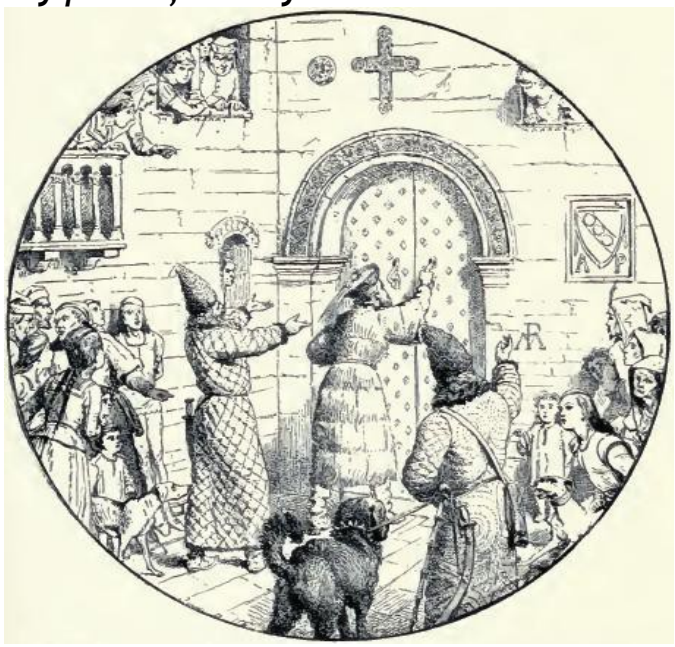
the gate: This gate is closely covered with advertisements. There are notices of Buddhist celebrations, rewards for the finding of people who have disappeared, advertisements of patent medicines, kerosene oil, and other goods, just as we see in our cities. But we see something here that we have never seen at home, the heads of criminals, hanging in small bamboo cages, just beyond the heavy stone gateways. Looking at them we remember that we are in China.

The first really good description we have of China is given by two Arabians in the years 850 and 877 A.D. They describe their journey, the customs of the Chinese, what goods are most in demand, and how to carry on trade. At that time the city of Hang-chow, where the trade was conducted, was one of the largest and wealthiest in the world. It was destroyed in A.D. 877, from which year Canton became the market for foreign trade.
But the best known account of China is, of course, that given by Marco Polo. Nicolo Polo, a noble of Venice, and the father of Marco, left that city about the year 1250 A.D., with his brother Matteo, on a trading voyage to the Crimea. From there they drifted eastward until they came to China, which had lately been conquered by Kublai Khan. They were kindly received, and after remaining some time, received permission to return home, on condition that they would come back to China. In 1274 they did so, this time accompanied by Marco, then a boy of sixteen. They arrived safely, and were again received in high favour. Marco took office under the Chinese and rose to the position of Tao-tai or Prefect of Che-Kiang. This time Marco and his father and uncle remained in China for many years, and finally returned home by way of Southern Asia. But when they reached Venice they were so changed that nobody recognized them, and the Venetians at first refused to believe that they were really the three Polos.

Houseboats on the River Canton

Everyone was amazed at the number of diamonds, rubies, and other precious stones that they had brought back with them. When the news of their great wealth

became known in Venice, all their former friends and acquaintances hurried to their house to congratulate them. Everybody wanted to know their adventures, and Marco was asked to give an account of what they had seen.
In his book he tells about the conquest of China by Kublai Khan and his fierce Mongols that had taken place only a few years before his arrival in that country. He visited the southern part of China, and says "that the number of inhabitants is so great that no person can count them, and if they were men-at-arms, those of the province of Manji would conquer the whole world; they are not so, however, but prudent merchants."
Marco Polo was afterwards captured in a war with Genoa and thrown into prison. This was several years after his return. As he had nothing to do, he began to dictate further accounts of his travels to a fellow-prisoner, who wrote them down in French. A famous German writer says of him: "If the name of Discoverer of Asia were to be given to any person, nobody would deserve it better than Marco Polo."



Marco Polo's return ~ no one recognised him, or wanted to believe that it was him.

Another story is told by Friar Odoric, who travelled in China. He noticed the peculiar method of fishing with cormorants; that of allowing the finger nails to grow long, and he speaks of the custom of dwarfing the feet of women. His description of the division of the Khan's empire into twelve provinces with four viceroys is correct, as are also the names mentioned by him of the post stations. But he is, like most men of that age, very superstitious, and is apt to explain what he does not understand by magic or witchcraft.

The Forbidden City was the palace of the Chinese emperors during the Ming and Qing dynasties. It is located in the heart of Beijing, the capital city of China, and is the largest ancient palace in the world. Forbidden City by Captain Olimar When was it built? The Forbidden City was built under the orders of the powerful Yongle Emperor of the Ming Dynasty between the years 1406 to 1420. More than one million people worked on the construction of the expansive palace. The best materials were brought in from all over China including specially made "golden" bricks, logs of the rare Phoebe zhennan trees, and blocks of marble. When the

palace was completed, the Yongle Emperor moved the capital of the empire to Beijing city.

The Grand Canal

How big is the Forbidden City? The Forbidden City is enormous. It covers an area of 178 acres that include 90 palaces with courtyards, 980 total buildings, and at least 8,700 rooms. The total floor space is over 1,600,000 square feet. Imagine if it was your job to clean that floor. The emperor had an army of servants, however, to take care of his palace and all the people that lived there. Features The Forbidden City also served as a fortress to protect the emperor and his family. It is surrounded by a 26 feet high wall and a 170 feet wide moat. Each corner of the palace has a tall guard tower where guards used to keep watch for enemies and assassins. Each side of the palace has a gate with the main gate being the Meridian Gate to the south. The other gates include the Gate of Devine Might to the north, the East Glorious Gate, and the West Glorious Gate.

The Forbidden City Palace in Beijing

Shade the interior of China on your map today: Make the desert yellow, the flatlands green and the mountains brown (the higher the mountain, the darker the brown). Also shade in the surrounding countries softly and write their names down. Have the rivers got their names yet?

And write your final account of China.

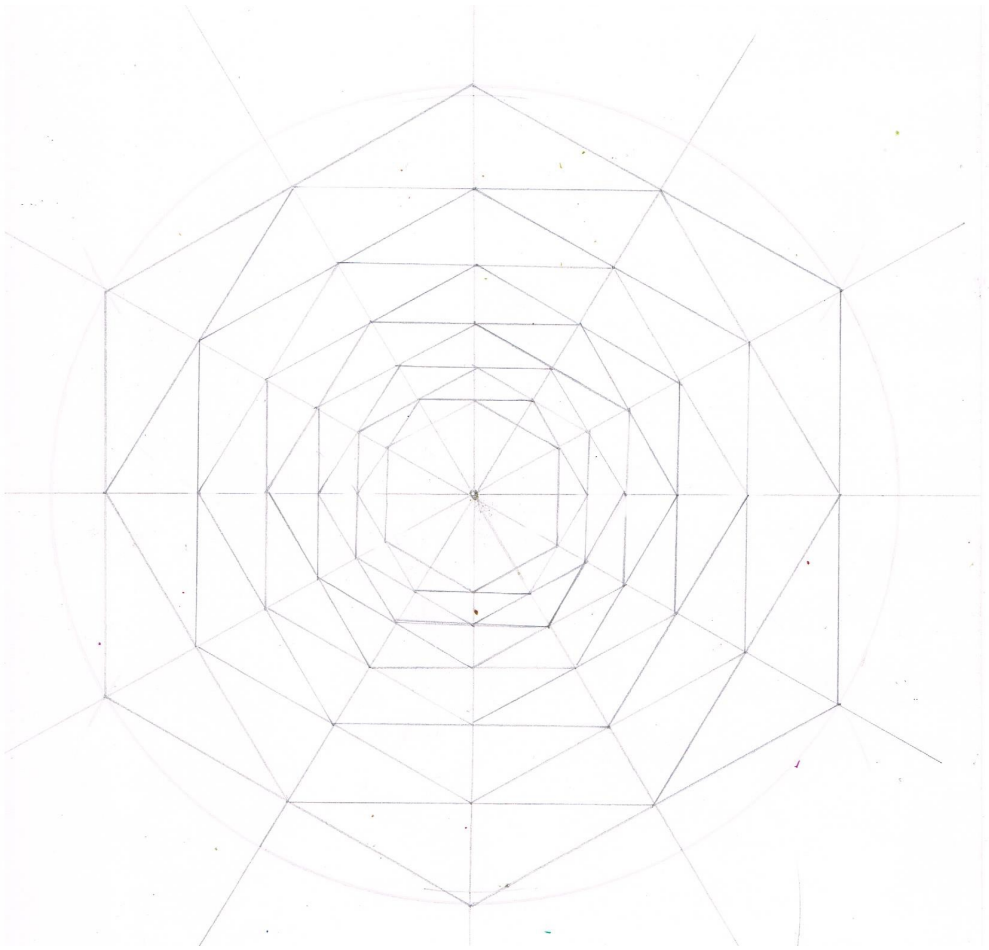
~Story Time

Read chapter XVIII. 'The End of Medieval Exploration' of 'A Book of Discovery' by M.B. Synge.

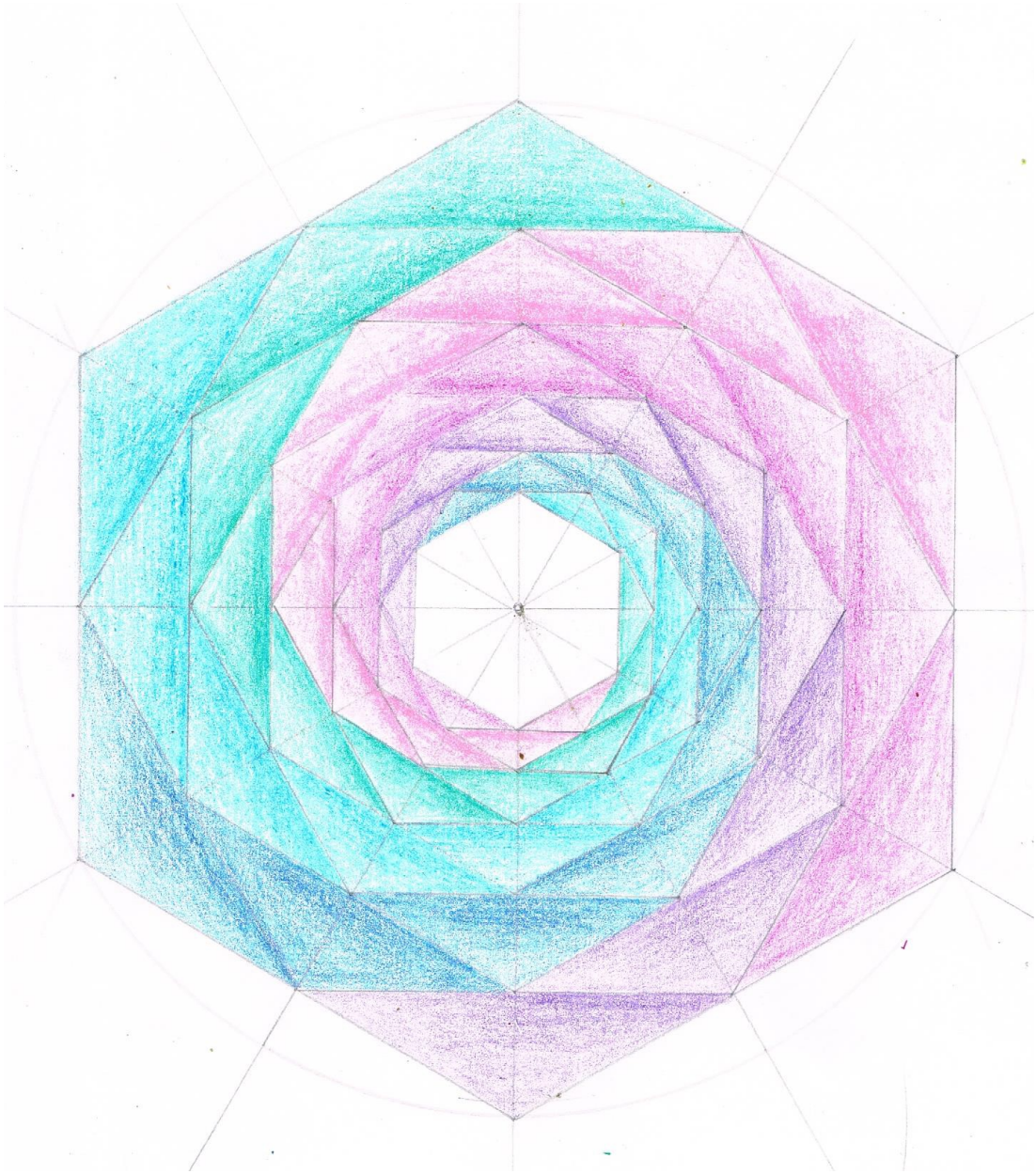
~Snack Time & Break

~Geometry in Nature

Draw a large circle with your compass. Keeping the same angle as the radius, make six marks on the circumference. It should fit exactly six times. Then connect the six points, each with its neighbour. Divide those lines in half (you remember how to do this with the help of a compass). Now draw lines through the centre point, connecting (and beyond) with all of the twelve points. (see my drawing)
Then connect every other point ~ this will create those triangles you can see. Go six triangles deep into the centre.



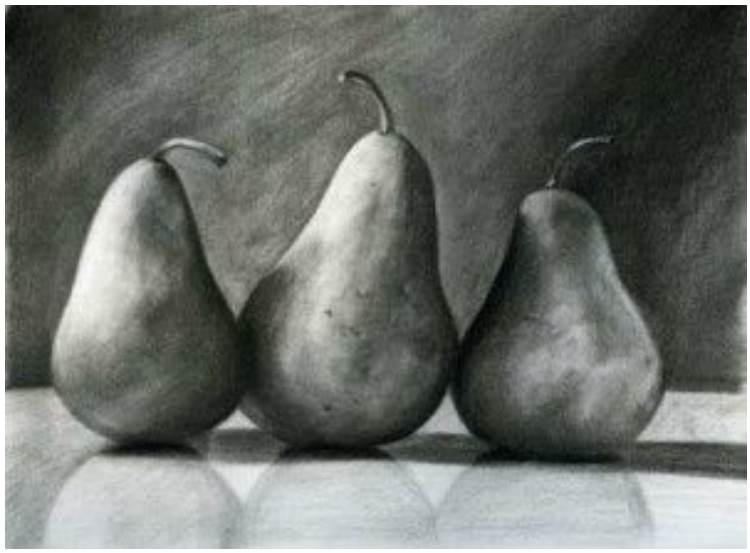
Now you are ready to colour it in. It has to be done in a specific way to become the shown spiral. Use six close shades of colour pencil. (I used magenta, violet, purple blue, turquoise and green)
Begin by gently colouring in one of the outermost, largest triangles. Then do the next one in to the right, then the next one in to the right... until you have coloured in the smallest one, closest to the centre.
Repeat this process with the remaining five colours.



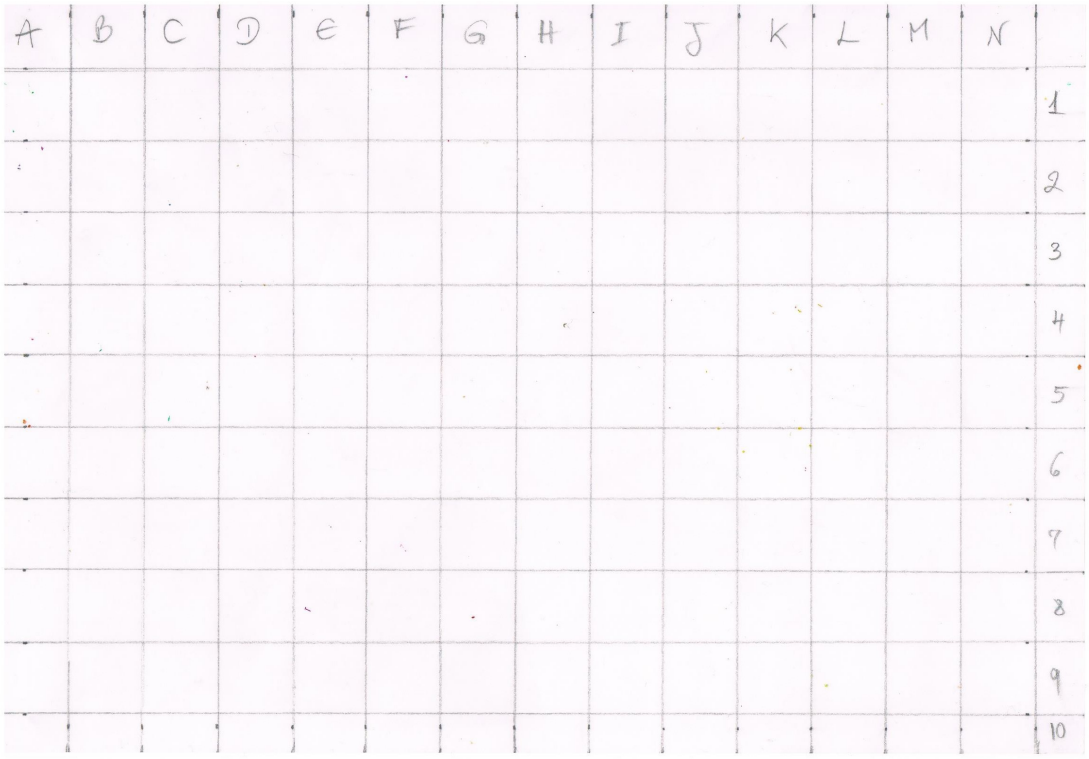
Where in nature can we find such a spiral? Can you think of any?

~Painting/Art

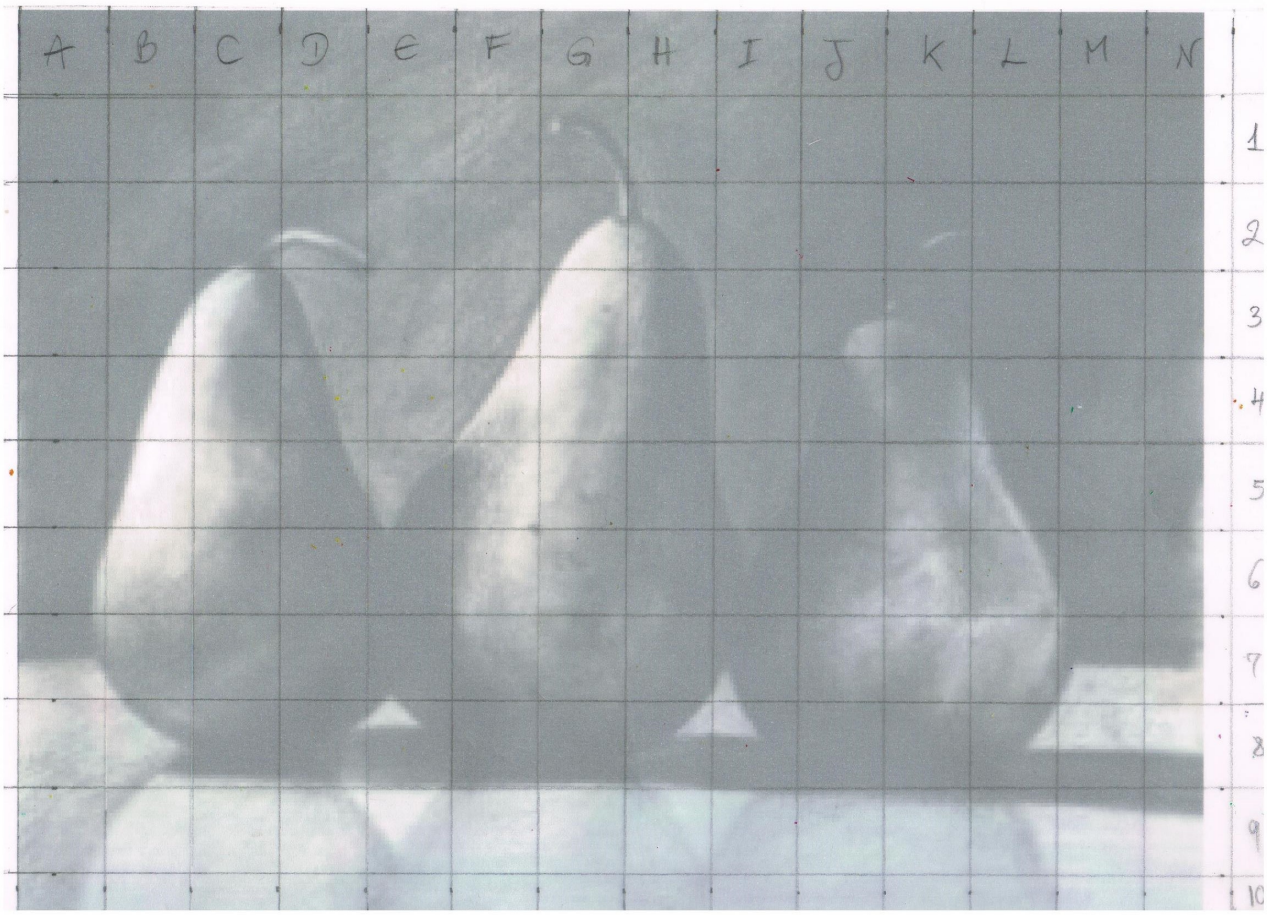
We'll paint another still life today. However, it'll be a completely new experience ~ we'll use a grid.
So, this is the picture we'll copy. There is a larger sample overleaf.



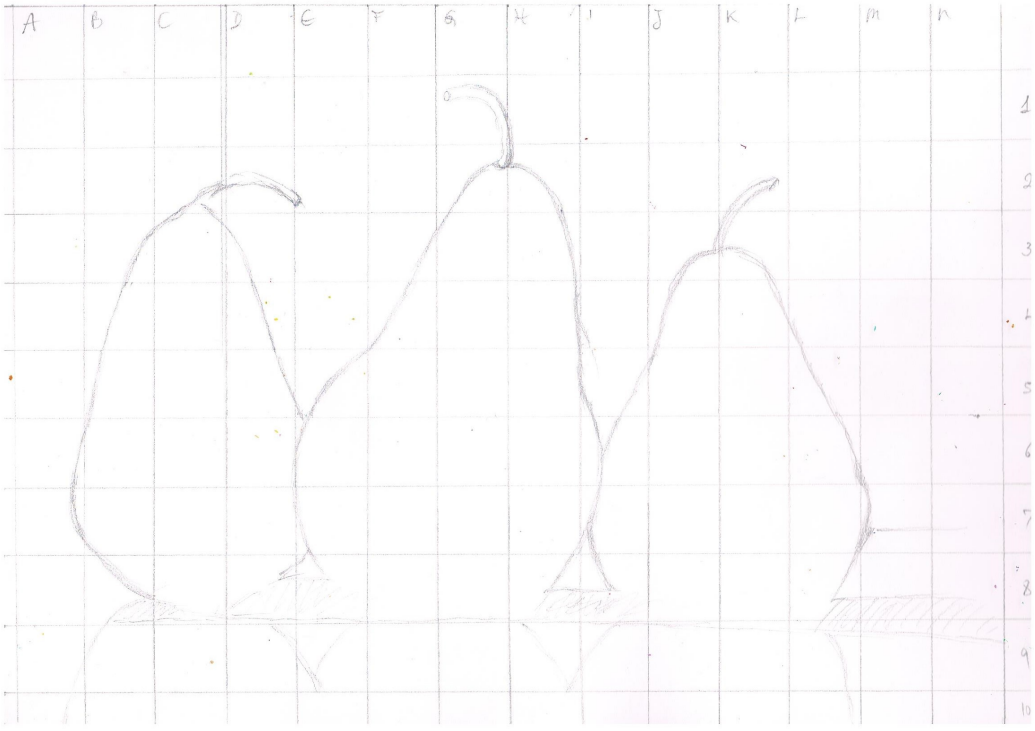
Use the transparent paper included and make a mark along the top and bottom every 5mm. Then do the same along both sides, left and right.
Now create a grid by connecting the marks like this:



Alphabetise each square along the top line ~ and number the squares down the side.



Now place it on the painting and tape it down on each corner:
Now recreate the grid on your painting paper and, with a soft led pencil, outline the three pears in that grid, square by square. The letters and numbers will help you find the correct square.



Once you have the basic outlines are complete, erase, as much as possible, the lines of the grid. Excellent! We'll leave it at that for today.
The next samples are from a maths block:

Renaissance Fair, Michaelmas Term, Block Three, Mathematics

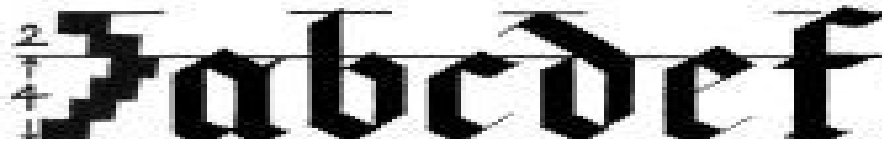
Day Six

~Welcome the Day

~Recorder Practice

~Morning Exercises

We'll start with the lower case this week ~ practise the first six letters this morning:



~Main Lesson

You have been doing 'linear equations' for a very long time ~ although we've never used that term before. But when you were about six years old and did your first number work like 3 + 4 = … , you solved equations (the word 'equals' gives it away). The only difference was that you didn't use an 'x' in the place of the answer.

Let's have a look at word problems now: using the above example (far to simple for us, of course ~ but just to explain), let's say there are 3 peaches and 4 kiwis in a fruit salad, making 7 pieces of fruit: x = 7

Now let's do a more age appropriate one:
Nikki bought 8 CDs and gave some to Oliver for his birthday gift. If Nikki has 5 CDs remaining, how many did she give to Oliver?

The unknown above is the number of CDs that Nikki gave to Oliver. So we will pick a letter to represent that unknown.

Let the number of CDs given to Oliver be presented by C.

The equation representing the information given above is 8 – C = 5

Solving for C gives C = 8 – 5 → C = 3 Still too easy?

Let's try another one:

Three times a number is 12 ~ what would the equation look like?

Let the number we are looking for be represented by x.
So the equation is 3x = 12

Now let's take that a step further and find x.
To get x on its own, we have to divide both sides by 3, of course.
x = 4

Let's find another formula. At Bill's Rent-a-Car, the rates are £28/day and 8p/mile. What is the formula we'd use to calculate the cost (let's call it c)? Let's use the letter d for the number of days, and m for the number of miles.

So, we are looking for c, the cost, and we have d (£28/day) and m (0.08/m).
That means the formula is c = 28d + 0.08m

Calculate the cost for renting a car for 10 days and 900 miles.

c = 28 x 10 + 0.08 x 900
c = 280 + 72
c = 352

Now you (answer after the story):

Using the same formula, calculate the cost for renting a car for 7 days and 345 miles.

c =

Also, calculate the cost for renting a car for 20 days and 700 miles.

c =

Here is another conversion formula:

Fahrenheit is a temperature scale based on the theory of the physicist Daniel Gabriel Fahrenheit (1686–1736). It uses the degree °F) as the unit. The scale is defined by two fixed points: the temperature at which water freezes into ice is defined as 32°F, and the boiling point of water is defined to be 212°F. Fahrenheit is used as the official temperature scale in the United States. All other countries in the world use the Celsius scale, in which 0 is water's freezing point (32°F) and 100 is its boiling point (212°F).

°F, the Fahrenheit Scale, and
°C, the Celsius Scale (part of the Metric System)
They both measure the same thing (temperature!), but use different numbers:
Boiling water (at normal pressure) measures 100° in Celsius, but 212° in Fahrenheit
And as water freezes it measures 0° in Celsius, but 32° in Fahrenheit

The scales start at a different number (0 vs 32), so we will need to add or subtract 32
The scales rise at a different rate (100 vs 180), so we will also need to multiply

To convert: from Celsius to Fahrenheit: first multiply by 180/100, then add 32
from Fahrenheit to Celsius: first subtract 32, then multiply by 100/180
But 180/100 can be simplified to 9/5,
and 100/180 can be simplified to 5/9, so this is the easiest way:

°C to °F	*Multiply by 9, then divide by 5, then add 32*
°F to °C	*Deduct 32, then multiply by 5, then divide by 9*

We can write each as a formula like this:
Celsius to Fahrenheit: (°C × 9/5) + 32 = °F
Fahrenheit to Celsius: (°F − 32) x 5/9 = °C
Write this into your main lesson book now. Tomorrow, we'll practise a few examples.

~Story Time

Read the second half of chapter V. 'Alexander the Great Explores India' (from 'It was now...' on page 41)of 'A Book of Discovery' by M.B. Synge.

Answers:

c = 28 x 7 + 0.08 x 345
c = 196 + 27.6
c = 223.60

c = 28 x 20 + 0.08 x 700
c = 560 + 56
c = 616

~Snack Time & Break

~Painting/Art

You've prepared the grid still life so carefully last week ~ let's apply some watercolour paints today. Here is mine:

Use your box of paints rather than the liquid Stockmar paints for this work. Also, I used some water soluble colour pencils for some of the detail and for the black shadows.

One more sample from the Physics block:

Renaissance Fair, Spring Term, Block One, Physics

Day Thirteen

~Welcome the Day

~Recorder Practice

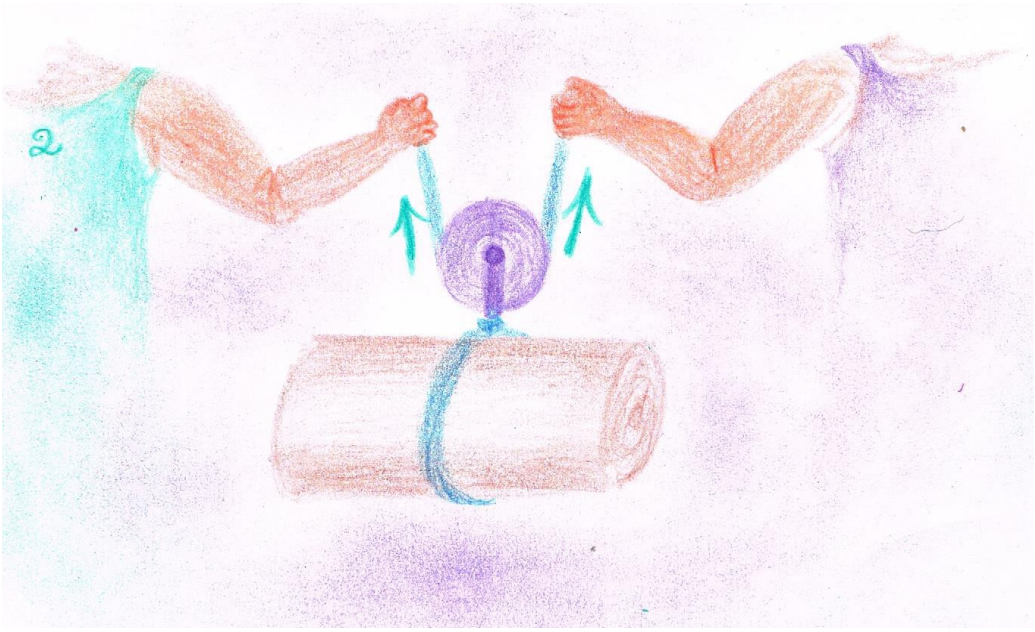
~Morning Exercises

~Main Lesson

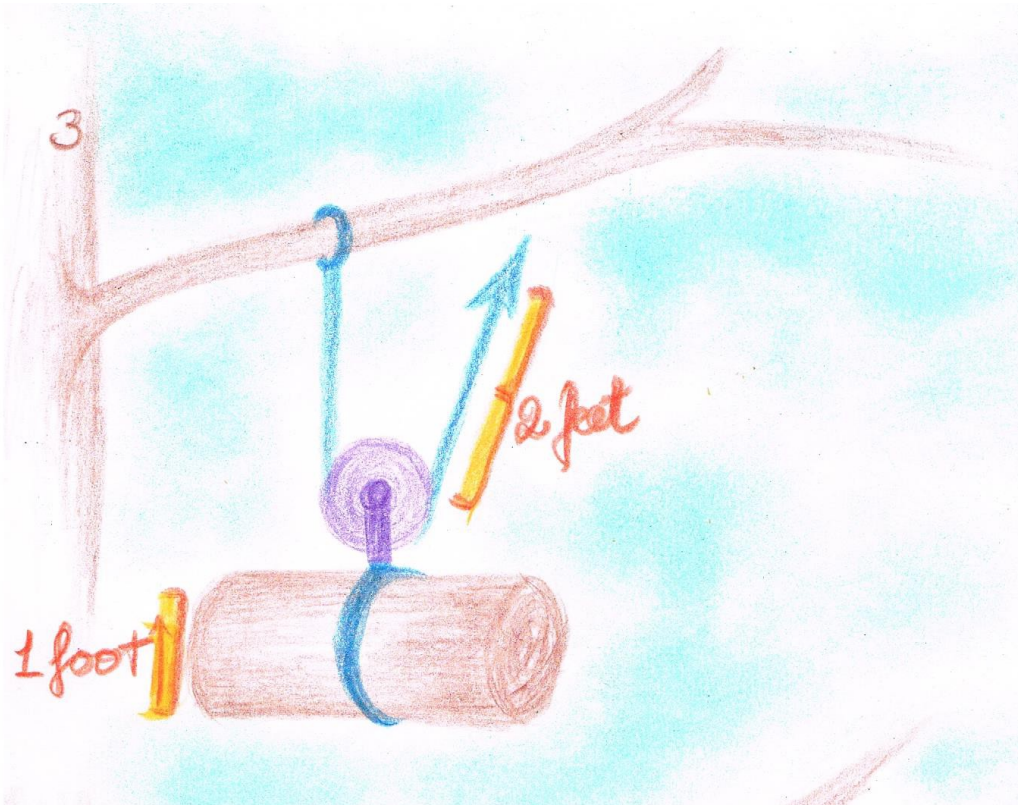
The Pulley

Suppose you have to lift something very heavy like a big rock or log ~ and you simply cannot get it to move...
Try this: tie a rope around the huge log then throw the other end over the strong branch of a tree. You will find that you can now lift it, at least a little bit. Because you are pulling it downward, rather than up, the weight seems much lighter.
If you repeated this for a while, however, the friction would gradually tear the rope.
To solve this problem, people of old invented a wheel with a groove all the way around it, mounted so it can turn freely and hang from something.
When they moved a rope over this, they found it can move with much less friction. This arrangement is called a 'Fixed Pulley'.

This fixed pulley doesn't actually make the load lighter ~ but it appears lighter because pulling down is easier than lifting up: when we lift something up, we use just our muscles ~ but, when you pull something down, your weight helps your muscles.
Using our weight, we can lift something that weighs as much or less than we do ~ but not anything heavier.
We could, perhaps, hang a counterweight on the other end of the rope, which is a principle often used in elevators, for example.
A counter weight, however, could prove problematic because we would need to hang it ~ and we could end up with the same problem as before, if it's a heavy one.
So, what people found over time ~ and Filippo Brunelleschi was greatly instrumental with these discoveries ~ is that a fixed pulley is not enough: A moveable pulley is needed in addition. It moves with the load. It is suspended by the rope ~ with one rope segment on each side, each of which supports half the load.
If one person supports the whole load, he or she supplies all the lifting force ~ but, if two people held one of the rope segments each, they share the lifting equally: they each need to lift with only half the force.

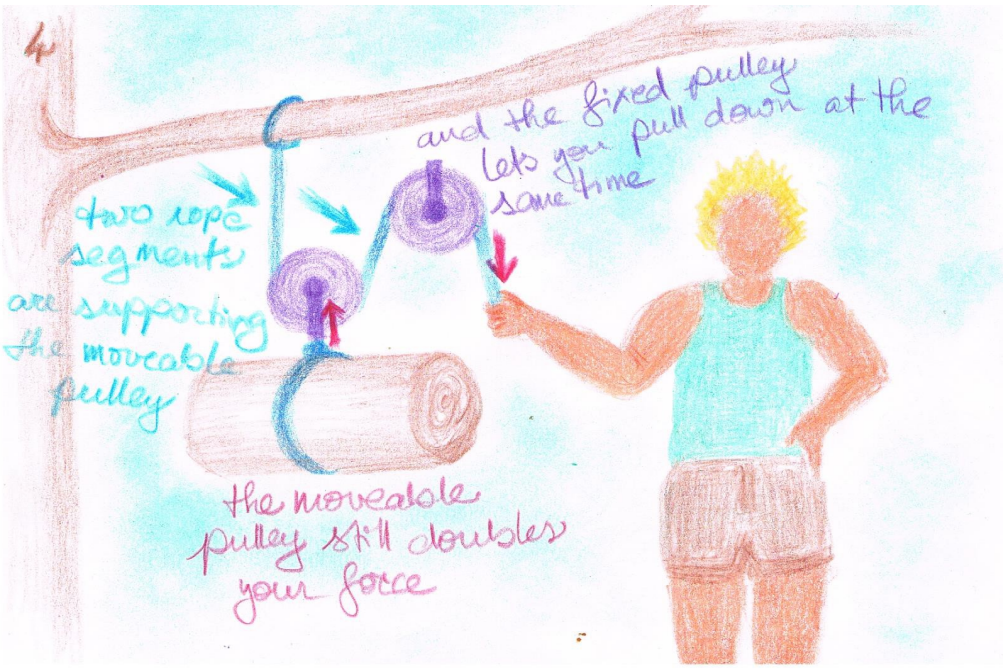


So, even if one side of the rope was attached to a branch ~ we would still have to carry only half the weight.
If we apply force to our rope segment, the pulley lifts twice as much force.
This means that we can lift a weight of 20lbsby using the force of 10lbs.
But to increase our force, we have to increase our distance (as we discovered with levers too).



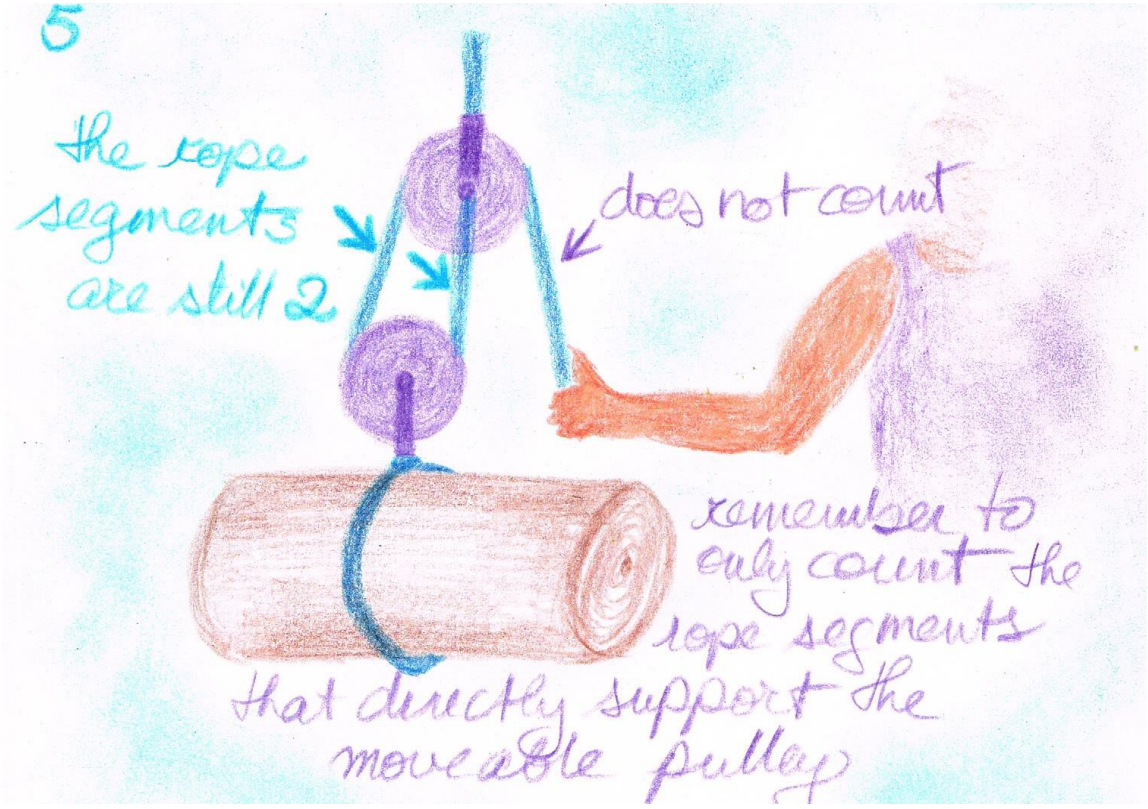
If we want to lift a load by one foot, you have to move your force two feet. Or, to move the load two feet ~ we move four feet: always twice as far.

But one big problem with movable pulleys is that we have to pull up which isn't always isn't always easy with a heavy load. What we need is something that allows us to pull down instead of up, which is what a fixed pulley does.
Suppose we combine the fixed pulley with the moveable pulley to get the advantage of both.



So, this simple machine really does make lifting easier.

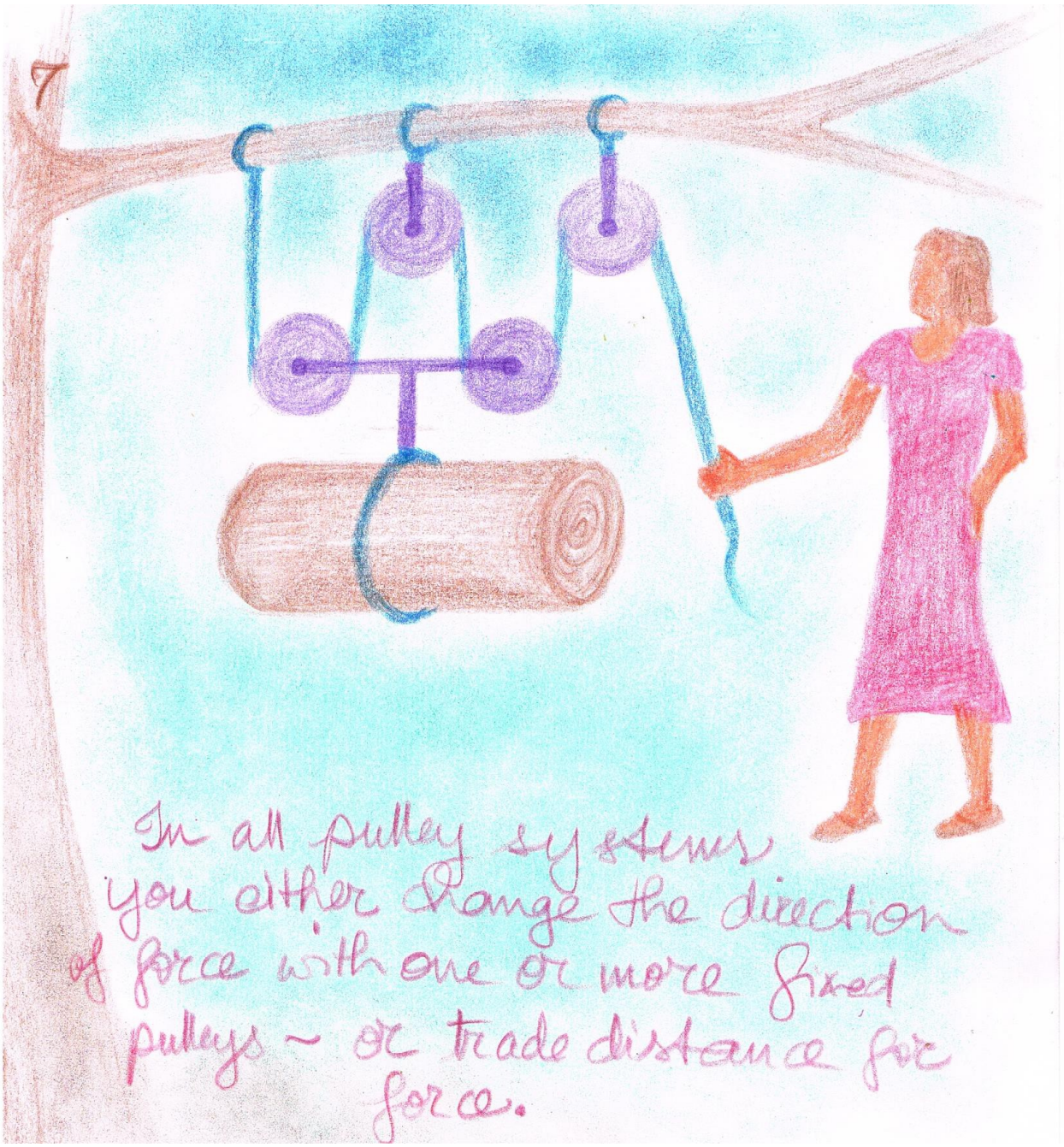
With this arrangement of pulleys, you can lift twice your own weight.
This is called: it has a "mechanical advantage of two".
We can find the mechanical advantage of any pulley arrangement by simply counting the rope segments that support the moveable pulley ~ in this case: two.
We can, by the way, attach the first rope to the fixed pulley (instead of to the branch) and the arrangement stays the same.



Remember to only count the rope segments that directly support the moveable pulley.
If the load was very heavy, we could add another fixed pulley ~ then three rope segments would support the moveable pulley:

and the mechanical advantage is three.

An even heavier load could be lifted if we had two fixed and two moveable pulleys, then the mechanical advantage would be four:



The pulley system multiplies our force by four ~ so four is the mechanical advantage ~ and we only have to exert ¼ of the effort.
We still have to 'trade' distance for force: we have to pull four times the distance that our load will be lifted.

In all pulley systems, we either change the direction of force with one or more fixed pulleys ~ or trade distance to gain force.

Brunelleschi invented an extraordinary hoist system that used pulleys, counterweights and the world's first reverse gear. It allowed just two oxen to lift huge loads of bricks and stone beams to the roof of the church.

A moveable pulley is really a second class lever.
A block and tackle is assembled so one block is attached to fixed mounting point and the other is attached to the moving load. The mechanical advantage of the block and tackle is equal to the number of parts of the rope that support the moving block.

~Story Time

Read the third and fourth chapters of 'Filippo's Dome' by Anne Rockwell.

~Snack Time & Break

~Handwork

Step Three:

Today, sew the three secondary pieces onto last week's primary triangle, making sure that the seam allowances are all on the same side.

Iron your completed 'disc' and place it on a piece of card or strong paper. Draw around it and, allowing one cm for the seam, cut it out.

Now place this template on your chosen piece of fabric for the back of the cushion, and cut it out, remembering to leave the extra centimetre.