

Colour Theory: Clay Characters

by Kim Fjordbotten

Project One

Create your own custom colour by mixing several colours together. Make a little character using your new colour. Give it a name to suit your colour. Provide a recipe for how to make your special colour so it is easily reproduced.



Hello I'm Sprout Green
3 White 60%
1 Green 20%
1 Yellow 20%

Hi my name is Baby Toe Pink
2 White 40%
2 Yellow 40%
1 Red 20%

Supplies:

Non-drying modeling clay AKA Plasticine
White, Red, Blue, Yellow
Optional: Orange, Purple, Green
Basic clay tools or a butter knife
Ruler
Cardboard cut to 5x7" or 6x8"
Pencil, markers notebook

Goal

These exercises will improve the understanding of colour theory as it relates to the practical application of math concepts such as ratio, fraction, and percentage. Level of difficult can be scaled to higher grades by increasing the number of colour combinations or by using awkward ratios. If your school encourages mentorship between upper and lower grades, this project would work well as senior students create ratios and do the math while younger students mix the colours. Both students can create and name their characters. Two additional projects using colour mixes can be found on the last two pages of this handout.

Preparation

Look at the different ways companies and designers use colours. Every year Pantone predicts the colour of the year. Clothes designers, home decorators, and even car manufacturers will make products in this colour. How does the paint-maker or the printer know how to get the exact version of the year's popular colour? Show the students samples of house paint colour charts. How does the paint mixer get the right colour for each customer? It is done by colour recipes. It is basic math — ratios and percentages.



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Step 1

Divide and distribute 2 primaries to each student. Note: Yellow and Blue work best. Red and Blue or Red and Yellow will be subtler combinations.



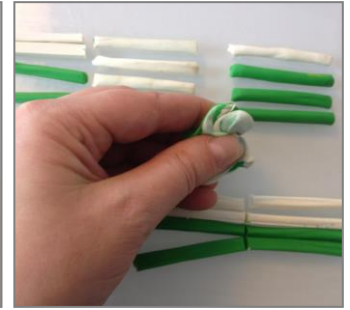
Roll long tubes.



Cut into equal parts.



Arrange the ratios.

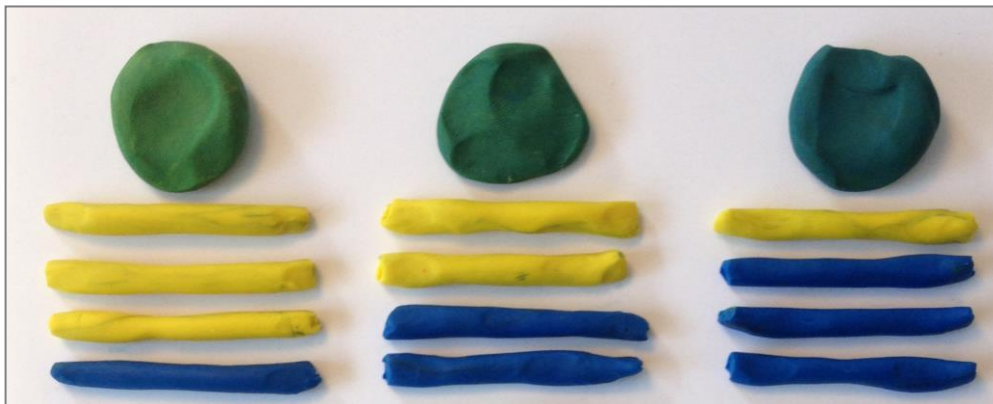


Mix new colour.

- Roll-out colour. Use your fingertips gently to roll clay onto a table surface to create long snake-like forms of even thickness, about $\frac{1}{4}$ inch or $\frac{1}{2}$ centimeter.
- Measure and cut snakes to equal lengths 2 inches or 5 centimeters. Six pieces of each colour are required.
- Arrange the colours in groups of 4 pieces in the following ratios 1:3, 2:2 and 3:1.
- Mix two primaries to create 3 versions of the secondary colour.

Step 2

Have a grade-appropriate discussion of how this is expressed in math.



Green 1

1 Blue - 3 Yellow
1:3
 $\frac{1}{4}$, $\frac{3}{4}$
.25 and .75
25% Blue, 75% Yellow

Green 2

2 Blue - 2 Yellow
2:2 same as 1:1
 $\frac{2}{4}$ same as $\frac{1}{2}$
.5% and .5%
50% Blue, 50% Yellow

Green 3

3 Blue - 1 Yellow
3:1
 $\frac{3}{4}$, $\frac{1}{4}$
.75 and .25
25% Yellow, 75% Blue

In layman's terms a ratio represents, for every amount of one thing, how much there is of another thing. For example, supposing one has 8 oranges and 6 lemons in a bowl of fruit, the ratio of oranges to lemons would be 4:3 (which is equivalent to 8:6) while the ratio of lemons to oranges would be 3:4. Additionally, the ratio of oranges to the total amount of fruit is 4:7 (equivalent to 8:14). The 4:7 ratio can be further converted to a **fraction** of $\frac{4}{7}$ to represent how much of the fruit is oranges.

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Step 3

Add white to create three tints of your secondary colour. Repeat the same procedure as in **Step 1**.

- A. Elementary Level:** If you have a store-bought green and add white, the ratios for three tints would be the same as previous exercise.



Green 4

1 Green - 3 White

1:3

1/4, 3/4

.25, .75

25% Green, 75% White

Green 5

2 Green - 2 White

2:2 same as 1:1

2/4 same as 1/2

.5%, .5%

50% Green, 50%

Green 6

3 Green - 1 White

3:1

3/4, 1/4

.75, .25

75% Green 25% White

Try these!



5 part Colour Mixing

1:4 = 20%

2:3 = 40%

3:2 = 60%

4:1 = 80%

Other shapes will work too.
Encourage the students to estimate and experiment.



10 part Colour Mixing: Skin Tones

Too much yellow will turn it too greenish. Less white will create darker skin tones.

1:9 = 10%

2:8 = 20%

3:7 = 30%

4:6 = 40%



More Fun!

View your mixed colours under a microscope. They are not as mixed as you think. Our eye cannot see the small details so it simplifies the information and we see a new colour.

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B. Junior/Senior Level: What if you used Green 2 from **Step 1**?

Green 2 is the light green made by mixing 1 part blue and 3 parts yellow. Now mix with white
How will your ratios reflect the amount of mixed colour in proportion to the white?



Green 4 (1 Blue: 3 Yellow)

1 Blue - 3 Yellow - 12 White
1:3:12
 $1/16 + 3/16 + 9/16$
.06, .19, .75

6% Blue
19% Yellow

Green 5

1 Blue - 3 Yellow - 4 White
1:3:4
 $1/8 + 3/8 + 4/8$
.125, .375, .5

12.5% Blue
37.5% Yellow
50% White

Green 6

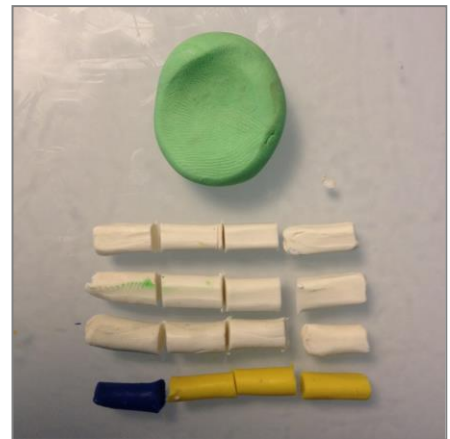
3 Blue - 9 Yellow - 4 White
3: 9: 16
 $3/16 + 9/16 + 4/16$
.19, .56, .25

19% Blue
56% Yellow

Does it make sense?

Let's express it visually. Consider the initial ratios for blue and yellow that made the green, compared to amount the white.

In math terms, this is called finding the **common denominator**. It's usually easiest to add, subtract, or compare fractions when each is expressed with the same denominator, called a "common denominator". In the clay, finding the common denominator can be demonstrated by cutting all the pieces to match the amount of least used colour. For example, in **Green 4**, there is less blue than white or yellow (1:3:12). The image to the right indicates this ratio visually.



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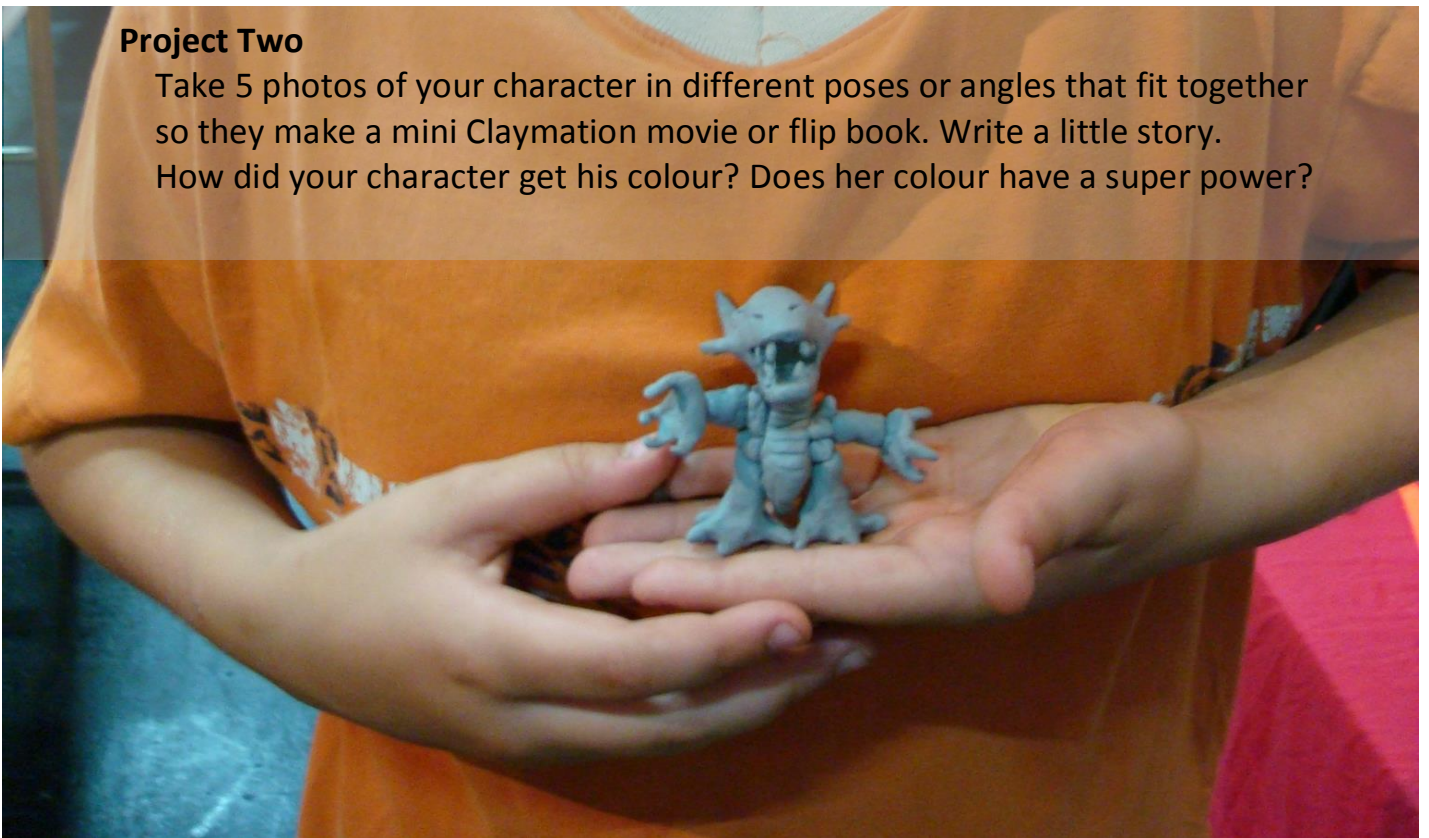
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Here are examples along with their ratios to illustrate the range of colours made using only the primary colours.



Project Two

Take 5 photos of your character in different poses or angles that fit together so they make a mini Claymation movie or flip book. Write a little story. How did your character get his colour? Does her colour have a super power?



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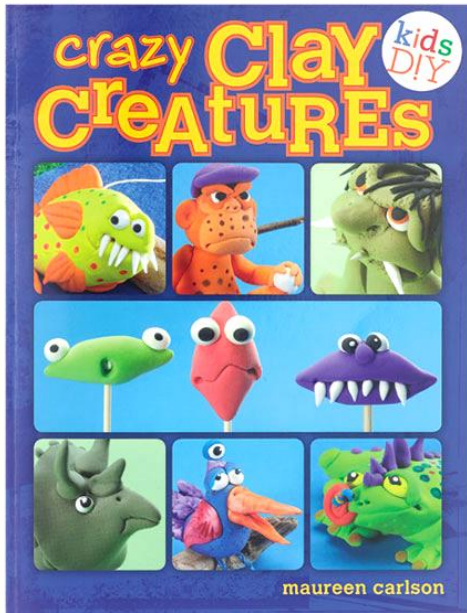
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Project Three

Let's use all the beautiful new colours to make a textured relief painting by pressing colours onto cardboard.

Do you need inspiration?

The Paint Spot stocks several books on clay creatures.



Look in the library for children's books illustrated by Barbara Reid. [Visit her website.](#)

