RATIOS
Volume 39

2 DOUBLE-SIDED SETS INCLUDED
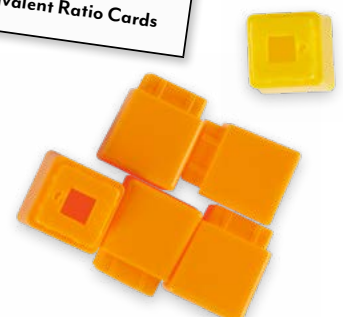
Developed with Kristin Hotter
Grades 6-8

Card 8:
Use 9 cubes to make a purple, green, white, and orange tower. The ratio of purple cubes to orange cubes is 2:1. The ratio of purple and orange cubes to all cubes is 2:3.

Equivalent Ratio Cards

Card 4:
4 Green Cubes, 5 White Cubes,
3 Red Cubes, 1 Brown Cub[e]

Introductory Ratio Cards

Content

Each set of task cards provides students with independent or small group practice with ratios. Each set of cards provides introductory examples that set students up to be successful when practicing independently. As students work through a set of task cards, they will also fill out a student worksheet that easily helps check for understanding.

The first set of task cards asks students to determine ratio relationships when provided with a set of givens. The second set of task cards asks students to create Unifix® Cube towers. They'll determine how many of each Unifix® Cube color to use based on equivalent fraction clues provided on the front of the card.

All task cards should be cut out and laminated prior to the activity.

Objectives

Students will...
- Learn how to determine ratios and if the ratios are equivalent
- Be able to read and understand a ratio in two forms, using the word "to" and using a ":"
- Be able to build Unifix® cube towers to determine unknown numbers in a ratio sentence

Materials

- Unifix® Cubes Set of 3,000 — TB21918
- Unifix® Cubes Set of 1,000 — TB11561
- Unifix® Cubes Set of 100 — TB11548

Common Core State Standards

CCSS.MATH.CONTENT.6.RP.A.1 — Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.

CCSS.MATH.CONTENT.6.RP.A.3 — Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.

CCSS.MATH.CONTENT.7.RP.A.2 — Recognize and represent proportional relationships between quantities.

RATIO INTRODUCTORY EXAMPLE

Show students a pile of Unifix® Cubes.
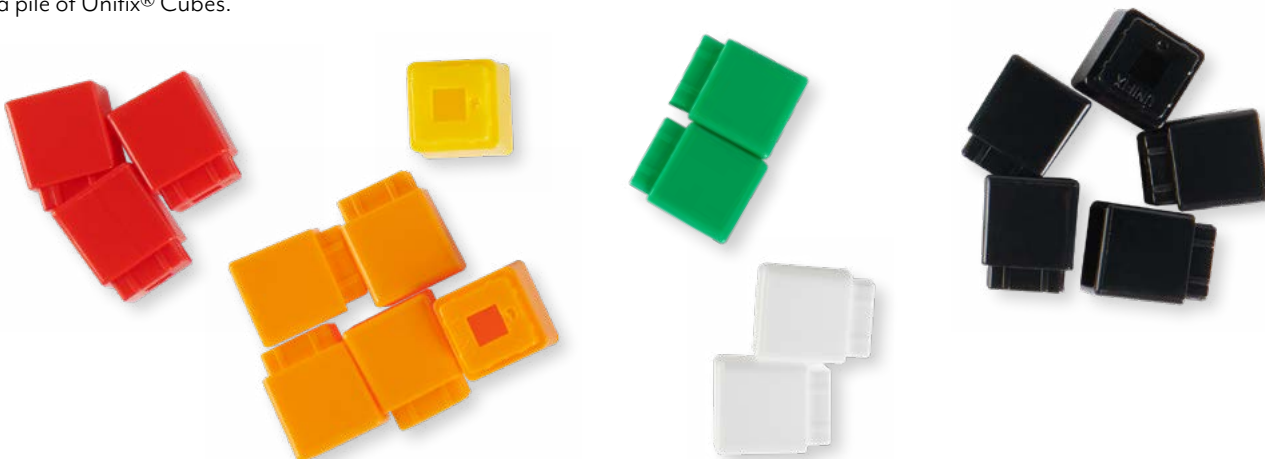
1. Ask students how many total Unifix® Cubes are in the pile. (18)
2. Ask students to identify how many of each color cube there are. In your questioning, include colors, such as blue and purple, which are not present.
3. Remind students a ratio is a relationship between two numbers. It tells how many times one number contains another. A ratio will always ask for two values. You need to put them in the same order in which they are asked.
4. One ratio relationship that can be identified in this set of Unifix® Cubes is **green cubes:white cubes**.
   - How many green cubes? (2)
   - How many white cubes? (2)

The ratio of **green cubes:white cubes** is 2:2, 2 to 2, or 2/2.

Can this ratio be simplified? (Yes, it can reduce to 1/1.)

Ask students to identify these other ratios.

Total Unifix® Cubes: Yellow Cubes (18:1, 18 to 1, or 18/1)	Orange Cubes: Red Cubes (5:3, 5 to 3, or 5/3)	Black and White Cubes: Primary Color Cubes (7:4, 7 to 4, 7/4)	Blue Cubes :Total Unifix® Cubes (0:18, 0 to 18, 0/18)

CHECK FOR UNDERSTANDING

Using the same numbers of Unifix® Cubes, ask students to create their own ratio. They can trade with a neighbor and solve.

Task Cards:

The difficulty of the task increases as the number on the card increases.

Cards 1-10: Ratios that are part-part and part-whole. Some ratios, such as cards 6-10, can be simplified.
Example: Green Cubes: Total Number of Cubes

Cards 11-20: Ratios that ask students to combine information within the ratio.
Example: Green Cubes: Brown, White, and Red Cubes

Cards 21-30: Ratios that provide students with information. Students then need to determine how many of each color cube are in the pile.

Example: A pile of Unifix® Cubes has purple,blue, and red cubes. The ratio of purple to total number of cubes is 6:15. The ratio of purple and blue: red is 10:5.

How many of each color cube are in the pile? (5 red, 4 blue, and 6 purple)

EQUIVALENT RATIO INTRODUCTORY EXAMPLE

Use 16 cubes to create a tower with red, orange, and yellow cubes. The ratio of all cubes to red cubes is 2:1. The ratio of yellow cubes to orange cubes is 3 to 1. How many of each color of cube are in the tower?

What number is provided in the problem? (16)

How does 16 help us determine how many red cubes there are? (There are twice as many total cubes as red cubes. That means there are 8 red cubes.)

What other information is provided? (There are three times as many yellow cubes as orange cubes.)

Keep in mind 8 of the cubes are red. How many are left that are orange and yellow? (8)

How many are orange? How many are yellow? (2 are orange and 6 are yellow.)

Equivalent Ratio Task Cards

Cards 1-5: Introductory cards.
Cards 6-22: Ask students to apply what they know about equivalent fractions to determine how many of each color should be included in a particular tower.

INTERVENTION

Since the goal of the first set of task cards is about creating ratios rather than knowing primary colors, secondary colors, etc., ask students to find a ratio for a single color rather than group. That will still give them practice with creating ratios, but make things a bit more concrete.

Since the second goal is more about getting students to understand equivalent ratios rather than figuring out how many cubes go in a tower, help students find equivalent ratios by following these steps.

Step 1: Provide a ratio, such as 1:3, in simplest form. Remind students it's a kind of fraction, so it can be written as 1/3.

Step 2: Since there are two parts to the ratio, use two different colors, such as red and blue. Explain to students that one color represents the first number and the other color represents "what's left" when the first number is subtracted from the second number in the ratio.
  Red = first number (1 red Unifix® Cube)
  Blue= "what's left" (3-1 = 2) (2 blue Unifix® Cubes)

Step 3: Put the red cubes in one group and the blue cubes in a second pile. Explain that the red cubes represent the denominator of the fraction. All of the cubes (red and blue) represent the denominator.

Step 4: Since the red pile has 1 cube, you'll always add 1 cube. (Put a "+1"sticky note above that group to remind students.) Since the blue pile has 2 cubes, you'll always add 2 cubes. (Put a "+2" sticky note above that group to remind students.)

Step 5: Add 1 cube to red and 2 cubes to blue.

Step 6: Ask students what is the total number of red cubes? (2) And ask students what is the total number of cubes? (6)
  2:6 is a ratio that's equivalent to 1:3.

EXTENSION

Ask students to create their own tower problems and have a friend solve them.

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<u>FRONT</u> of Introductory Ratio Cards 1-9

Card 1:

4 Brown Cubes, 2 Yellow Cubes,
3 Green Cubes, and 1 White Cube

Introductory Ratio Cards

Card 4:

4 Green Cubes, 5 White Cubes,
3 Red Cubes, 1 Brown Cube

Introductory Ratio Cards

Card 7:

9 Yellow Cubes, 2 Brown Cubes,
3 Red Cubes, 5 White Cubes

Introductory Ratio Cards

Card 2:

3 Blue Cubes, 4 Orange Cubes,
and 9 Black Cubes

Introductory Ratio Cards

Card 5:

8 Brown Cubes, 3 Red Cubes,
7 Green Cubes, 2 Orange Cubes

Introductory Ratio Cards

Card 8:

6 Orange Cubes, 3 Blue Cubes,
4 Green Cubes, 5 Brown Cubes

Introductory Ratio Cards

Card 3:

6 Red Cubes, 5 White Cubes,
4 Blue Cubes, 2 Yellow Cubes

Introductory Ratio Cards

Card 6:

4 Yellow Cubes, 6 Orange Cubes,
5 Black Cubes

Introductory Ratio Cards

Card 9:

8 Orange Cubes, 7 Blue Cubes,
3 Red Cubes, 5 Purple Cubes,
2 Black Cubes

Introductory Ratio Cards

Card 7:

All Cubes to White Cubes

Red Cubes to Yellow Cubes

Introductory Ratio Cards

Card 4:

Brown Cubes to White Cubes

Green Cubes to Total Cubes

Introductory Ratio Cards

Card 1:

Green Cubes to Total Cubes

Yellow Cubes to Green Cubes

Introductory Ratio Cards

Card 8:

Orange Cubes to Blue Cubes

All Other Cubes to Brown Cubes

Introductory Ratio Cards

Card 5:

Brown Cubes to Green Cubes

All Cubes to Red Cubes

Introductory Ratio Cards

Card 2:

Black Cubes to Total Cubes

Orange Cubes to Blue Cubes

Introductory Ratio Cards

Card 9:

All Cubes to Purple Cubes

Orange Cubes to All Other Cubes

Introductory Ratio Cards

Card 6:

Orange Cubes to Yellow Cubes

Black Cubes to All Other Cubes

Introductory Ratio Cards

Card 3:

Total Cubes to Red Cubes

Blue Cubes to White Cubes

Introductory Ratio Cards

Card 10:

4 Red Cubes, 3 Orange Cubes,
5 Yellow Cubes, 6 Green Cubes,
2 Blue Cubes, 10 Purple Cubes

Introductory Ratio Cards

Card 13:

3 Orange Cubes, 4 Yellow Cubes,
2 Blue Cubes, 2 Black Cubes,
1 Brown Cube

Introductory Ratio Cards

Card 16:

4 Red Cubes, 8 Orange Cubes,
7 Blue Cubes, 4 White Cubes,
3 Brown Cubes

Introductory Ratio Cards

Card 11:

3 Red Cubes, 4 Orange Cubes,
5 Blue Cubes

Introductory Ratio Cards

Card 14:

3 Red Cubes, 4 Yellow Cubes,
2 Green Cubes, 2 White Cubes,
1 Purple Cube

Introductory Ratio Cards

Card 17:

3 Brown Cubes, 7 Yellow Cubes,
9 Red Cubes, 4 Green Cubes

Introductory Ratio Cards

Card 12:

5 Green Cubes, 3 Brown Cubes,
2 Purple Cubes

Introductory Ratio Cards

Card 15:

2 Red Cubes, 5 Yellow Cubes,
1 Blue Cube, 3 Purple Cubes,
4 Black Cubes

Introductory Ratio Cards

Card 18:

5 Blue Cubes, 8 Green Cubes,
6 Black Cubes, 3 White Cubes

Introductory Ratio Cards

Card 16:

Primary Color Cubes to
All Other Cubes

Red and Orange Cubes to
All Other Cubes

Introductory Ratio Cards

Card 13:

Cubes with 4-Letter Color to
Cubes with 5-Letter Color

Total Cubes to
Cubes with 6-Letter Color

Introductory Ratio Cards

Card 10:

Yellow Cubes to All Cubes

Purple Cubes to Green Cubes

Introductory Ratio Cards

Card 17:

All Other Cubes to Cubes with
5-Letter Colors (16:7)

Green Cubes to Brown, Yellow and
Red Cubes (4:12)

Introductory Ratio Cards

Card 14:

Primary Color Cubes to
Cubes with 5-Letter Color

Colors of the Rainbow to All Cubes

Introductory Ratio Cards

Card 11:

Red Cubes to Total Cubes

Orange and Blue Cubes to
Red Cubes

Introductory Ratio Cards

Card 18:

Cubes with American Flag Colors
to All Other Cubes

Black and White Cubes : All Cubes

Introductory Ratio Cards

Card 15:

Cubes with colors that start with
"bl-" to All Other Cubes

Cubes with 6-Letter Color to
All Cubes

Introductory Ratio Cards

Card 12:

Total Cubes to Green Cubes

Purple Cubes to
Green and Brown Cubes

Introductory Ratio Cards

Card 19:

7 Purple Cubes, 8 Green Cubes, 3 Red Cubes, 9 Yellow Cubes

Introductory Ratio Cards

Card 22:

Make a pile with red, white, and blue cubes. The ratio of red and white cubes to blue cubes is 15:9. The ratio of red cubes to all cubes is 12:12.

Introductory Ratio Cards

Card 25:

Make a pile with red, orange, black and brown cubes. The ratio of colors in the rainbow to colors not in the rainbow is 14:11. The ratio of orange and brown to red and black cubes is 16:9.

Introductory Ratio Cards

Card 20:

9 White Cubes, 5 Black Cubes, 4 Yellow Cubes, 3 Orange Cubes, 2 Brown Cubes, 8 Blue Cubes

Introductory Ratio Cards

Card 23:

Make a pile with blue, purple, and yellow cubes. The ratio of primary colors to the secondary colors is 18:5. The ratio of 6-letter colors to blue is 16:7.

Introductory Ratio Cards

Card 26:

Make a pile with orange, yellow, and green cubes. The ratio of orange cubes to yellow cubes is 2:1. The ratio of orange cubes to all cubes is 10:21.

Introductory Ratio Cards

Card 21:

Make a pile with brown, white, and black cubes. The ratio of black cubes to all cubes is 7:28. The ratio of white to all other cubes is 8:20

Introductory Ratio Cards

Card 24:

Make a pile with purple, green, white, and blue cubes. The ratio of colors on the American flag to colors not on the flag is 17:12. The ratio of blue and purple to green and white is 13:16.

Introductory Ratio Cards

Card 27:

Make a pile with blue, black, and white cubes. The ratio of blue cubes to white cubes is 3:4. The ratio of white cubes to all cubes is 16:33.

Introductory Ratio Cards

Card 25:

The pile has _____ red cubes, _____ orange cubes, _____ black cubes, and _____ brown cubes.

Introductory Ratio Cards

Card 22:

The pile has _____ red cubes, _____ white cubes, and _____ blue cubes.

Introductory Ratio Cards

Card 19:

Primary Color Cubes to Secondary Color Cubes

Green, Red, and Purple Cubes to Yellow Cubes

Introductory Ratio Cards

Card 26:

The pile has _____ orange cubes, _____ yellow cubes, and _____ green cubes.

Introductory Ratio Cards

Card 23:

The pile has _____ blue cubes, _____ purple cubes, and _____ yellow cubes.

Introductory Ratio Cards

Card 20:

Cubes with 5-Letter Colors to All Other Cubes

Yellow and Orange Cubes to Brown, Blue, and White Cubes

Introductory Ratio Cards

Card 27:

The pile has _____ blue cubes, _____ black cubes, and _____ white cubes.

Introductory Ratio Cards

Card 24:

The pile has _____ purple cubes, _____ green cubes, _____ white cubes, and _____ blue cubes.

Introductory Ratio Cards

Card 21:

The pile has _____ brown cubes, _____ white cubes, and _____ black cubes.

Introductory Ratio Cards

Card 28:

Make a pile with red, orange, and yellow cubes. The ratio of orange cubes to yellow and red cubes is 1:3. The ratio of yellow cubes to all cubes is 7:24.

Introductory Ratio Cards

Card 29:

Make a pile with green, brown and purple cubes. The ratio of purple cubes to all cubes is 2:5. The ratio of brown cubes to all other cubes is 7:15.

Introductory Ratio Cards

Card 30:

Make a pile with red, orange, yellow and green cubes. The ratio of red and orange cubes to yellow and green cubes is 13:11. The ratio of orange cubes to yellow cubes is 1:2. The ratio of green cubes to red cubes is 3:1

Introductory Ratio Cards

Card 30:

There are _____ red cubes, _____ orange cubes, _____ yellow cubes, and _____ green cubes.

Introductory Ratio Cards

Card 29:

There are _____ green cubes, _____ brown cubes, and _____ purple cubes.

Introductory Ratio Cards

Card 28:

The pile has _____ red cubes, _____ orange cubes, and _____ yellow cubes.

Introductory Ratio Cards

Task Card Recording Sheet for Introductory Ratio Cards

Card 1:	Card 2:	Card 3:	Card 4:
Card 5:	Card 6:	Card 7:	Card 8:
Card 9:	Card 10:	Card 11:	Card 12:
Card 13:	Card 14:	Card 15:	Card 16:
Card 17:	Card 18:	Card 19:	Card 20:
Card 21:	Card 22:	Card 23:	Card 24:
Card 25:	Card 26:	Card 27:	Card 28:
Card 29:	Card 30:		

FRONT of Equivalent Ratio Cards 1-9

Card 1:

Create a tower with 4 red cubes, 6 white cubes, and 3 blue cubes.

Equivalent Ratio Cards

Card 4:

Create a tower with 4 blue cubes, 2 red cubes, 8 purple cubes, and 4 yellow cubes.

Equivalent Ratio Cards

Card 7:

Use 8 cubes to make a red, brown, and purple tower. The ratio of red cubes to brown cubes is 1:1. The ratio of red cubes to all other cubes is also 1:1.

Equivalent Ratio Cards

Card 2:

Create a tower with 6 orange cubes, 7 yellow cubes, and 8 green cubes.

Equivalent Ratio Cards

Card 5:

Create a tower with 6 orange cubes, 8 red cubes, 4 green cubes, and 7 purple cubes.

Equivalent Ratio Cards

Card 8:

Use 9 cubes to make a purple, green, white, and orange tower. The ratio of purple cubes to orange cubes is 2:1. The ratio of purple and orange cubes to all cubes is 2:3.

Equivalent Ratio Cards

Card 3:

Create a tower with 8 blue cubes, 4 black cubes, and 6 white cubes.

Equivalent Ratio Cards

Card 6:

Use 6 cubes to make a blue and white tower. The ratio of blue cubes to white cubes should be 2:1.

Equivalent Ratio Cards

Card 9:

Use 10 cubes to make a blue and red tower. The ratio of all cubes to blue cubes is 5:1.

Equivalent Ratio Cards

Card 7:

I used _____ red cubes, _____ brown cubes, and _____ purple cubes.

Equivalent Ratio Cards

Card 4:

Which 2 colors have a ratio equivalent to 32:8?

Equivalent Ratio Cards

Card 1:

Which 2 colors have a ratio equivalent to 1:3?

Equivalent Ratio Cards

Card 8:

I used _____ purple cubes, _____ green cubes, _____ white cubes, and _____ orange cubes.

Equivalent Ratio Cards

Card 5:

Which 2 colors have a ratio equivalent to 3:2?

Equivalent Ratio Cards

Card 2:

Which 2 colors have a ratio equivalent to 4:3?

Equivalent Ratio Cards

Card 9:

I used _____ blue cubes and _____ red cubes.

Equivalent Ratio Cards

Card 6:

I used _____ blue cubes and _____ white cubes.

Equivalent Ratio Cards

Card 3:

Which 2 colors have a ratio equivalent to 3:4?

Equivalent Ratio Cards

Card 10:

Use 10 cubes to make a yellow, green and blue tower. The ratio of yellow cubes to green cubes is 1:1. The ratio of all cubes to blue cubes is 5:2.

Equivalent Ratio Cards

Card 13:

Use 14 cubes to create a yellow, blue, and purple tower. The ratio of yellow cubes to all cubes is 4:7. The ratio of purple to all cubes is 2:7.

Equivalent Ratio Cards

Card 16:

Use 16 cubes to create a yellow, white, and red tower. The ratio of yellow cubes to all cubes is 5:8. The ratio of yellow cubes to white cubes is 2:1.

Equivalent Ratio Cards

Card 11:

Use 12 cubes to make a red and green tower. The ratio of green cubes to total cubes should be 2:6.

Equivalent Ratio Cards

Card 14:

Use 15 cubes to create a red, brown, and green tower. The ratio of all cubes to green cues is 5:2. The ratio of red cubes to green cubes is 1:1.

Equivalent Ratio Cards

Card 17:

Use 18 cubes to create a black, brown, and blue tower. The ratio of brown cubes to all other cubes is 1:8. The ratio of blue cubes to brown cubes is 6:1.

Equivalent Ratio Cards

Card 12:

Use 12 cubes to make a red, white, and black tower. The ratio of red and white cubes to black cubes is 1:2.

Equivalent Ratio Cards

Card 15:

Use 15 cubes to create a red, blue, and yellow tower. The ratio of yellow cubes to all cubes should be 1:3. The ratio of red cubes to blue cubes should be 3:2.

Equivalent Ratio Cards

Card 18:

Use 20 cubes to create a red, orange, yellow, and green tower. The ratio of orange cubes to red cubes is 3:4. The ratio of orange cubes to yellow and red cubes is 1:2.

Equivalent Ratio Cards

BACK of Equivalent Ratio Cards 10-18

These cards should be printed double sided on the long edge and match up with handout 11.

Card 16:

I used _____ yellow cubes, _____ white cubes, and _____ red cubes.

Equivalent Ratio Cards

Card 13:

I used _____ yellow cubes, _____ blue cubes, and _____ purple cubes.

Equivalent Ratio Cards

Card 10:

I used _____ yellow cubes, _____ green cubes, and _____ blue cubes.

Equivalent Ratio Cards

Card 17:

I used _____ black cubes, _____ brown cubes, and _____ blue cubes.

Equivalent Ratio Cards

Card 14:

I used _____ red cubes, _____ brown cubes, and _____ green cubes.

Equivalent Ratio Cards

Card 11:

I used _____ red cubes and _____ green cubes.

Equivalent Ratio Cards

Card 18:

I used _____ red cubes, _____ orange cubes, _____ yellow cubes, and _____ green cubes.

Equivalent Ratio Cards

Card 15:

I used _____ red cubes, _____ blue cubes, and _____ yellow cubes.

Equivalent Ratio Cards

Card 12:

I used _____ red cubes, _____ white cubes, and _____ black cubes.

Equivalent Ratio Cards

FRONT of Equivalent Ratio Cards 19-22

Card 19:

Use 24 cubes to create a blue, white, green, and purple tower. The ratio of blue to purple cubes is 1:1. The ratio of green and purple to all cubes is 3:8. The ratio of all cubes to blue cubes is 3:1.

Equivalent Ratio Cards

Card 20:

Use 24 cubes to create a purple, black, red, and orange tower. The ratio of red cubes to orange cubes is 5:3. The ratio of orange cubes to purple cubes is 1:1.

Equivalent Ratio Cards

Card 21:

Use 25 cubes to create a red, green, and black tower. The ratio of black cubes to red cubes is 2:3. The ratio of green cubes to red and black cubes is 3:2

Equivalent Ratio Cards

Card 22:

Use 30 cubes to create a red, orange, yellow, green and blue tower. The ratio of red and blue cubes to yellow cubes is 1:1. The ratio of red cubes to blue cubes is 2:1. The ratio of green cubes to orange cubes is 1:2

Equivalent Ratio Cards

BACK of Equivalent Ratio Cards 19-22

These cards should be printed double sided on the long edge and match up with handout 13.

Card 21:

I used _____ red cubes, _____ green cubes, and _____ black cubes.

Equivalent Ratio Cards

Card 20:

I used _____ purple cubes, _____ black cubes, _____ red cubes, and _____ orange cubes.

Equivalent Ratio Cards

Card 19:

I used _____ blue cubes, _____ white cubes, _____ green cubes, and _____ purple cubes.

Equivalent Ratio Cards

Card 22:

I used _____ red cubes, _____ orange cubes, _____ yellow cubes, _____ green cubes, and _____ blue cubes.

Equivalent Ratio Cards

Task Card Recording Sheet for Equivalent Ratio Cards

Card 1:	Card 2:	Card 3:	Card 4:
Card 5:	Card 6:	Card 7:	Card 8:
Card 9:	Card 10:	Card 11:	Card 12:
Card 13:	Card 14:	Card 15:	Card 16:
Card 17:	Card 18:	Card 19:	Card 20:
Card 21:	Card 22:	Card 23:	Card 24:
Card 25:	Card 26:	Card 27:	Card 28:
Card 29:	Card 30:		

Answer Key for Introductory Ratio Cards

Card 1: 3:10 2:3	**Card 2:** 9:16 4:3	**Card 3:** 17:6 4:5	**Card 4:** 1:5 4:13
Card 5: 8:7 20:3	**Card 6:** 6:4 5:10	**Card 7:** 19:5 3:9	**Card 8:** 6:3 13:5
Card 9: 25:5 8:17	**Card 10:** 5:30 10:6	**Card 11:** 3:12 9:3	**Card 12:** 10:5 2:8
Card 13: 2:3 12:17	**Card 14:** 7:4 10:12	**Card 15:** 5:10 8:15	**Card 16:** 11:26 12:14
Card 17: 16:7 4:19	**Card 18:** 8:14 9:22	**Card 19:** 12:15 8:9	**Card 20:** 16:15 7:19
Card 21: 13 brown, 8 white, and 7 black cubes	**Card 22:** 12 red, 3 white, and 9 blue cubes	**Card 23:** 7 blue, 5 purple, and 11 yellow cubes	**Card 24:** 5 purple, 7 green, 9 white, and 8 blue cubes
Card 25: 8 red, 6 orange, 3 black, and 8 brown cubes	**Card 26:** 10 orange, 5 yellow, and 6 green cubes	**Card 27:** 12 blue, 16 white, and 5 black	**Card 28:** 11 red, 6 orange, and 7 yellow cubes
Card 29: 5 green, 7 brown, and 8 purple cubes	**Card 30:** 9 red, 4 orange, 8 yellow, and 3 green cubes		

Answer Key for Equivalent Ratio Cards

Card 1: Red:White	**Card 2:** Green:Orange	**Card 3:** White:Blue	**Card 4:** Purple:Red
Card 5: Orange:Green	**Card 6:** 4 blue and 2 white cubes	**Card 7:** 2 red, 2 brown, and 4 purple cubes	**Card 8:** 4 purple, 2 green, 1 white, and 2 orange cubes OR 4 purple, 1 green, 2 white, and 2 orange cubes
Card 9: 2 blue and 8 red cubes	**Card 10:** 3 yellow, 3 green, and 4 blue cubes	**Card 11:** 8 red and 4 green cubes	**Card 12:** 2 red, 2 white, and 8 black cubes
Card 13: 8 yellow, 2 blue, and 4 purple cubes	**Card 14:** 6 red, 3 brown, and 6 green cubes	**Card 15:** 6 red, 4 blue, and 5 yellow cubes	**Card 16:** 10 yellow, 5 white, and 1 red cube
Card 17: 4 black, 2 brown, and 12 blue cubes	**Card 18:** 8 red, 6 orange, 4 yellow, and 2 green cubes	**Card 19:** 8 blue, 1 white, 7 green, and 8 purple cubes	**Card 20:** 6 purple, 2 black, 10 red, and 6 orange cubes
Card 21: 6 red, 4 black, and 15 green cubes	**Card 22:** 6 red, 8 orange, 9 yellow, 4 green, and 3 blue cubes		