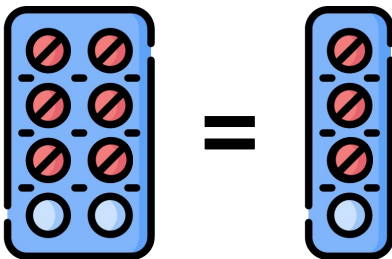# Helping With Math

Illustrating Equivalent Fractions Using Fraction Model (with denominators 8, 10, 12, 100)

GRADE 4

Equivalent fractions can be illustrated using **fraction models** so the fractions may be visualized in a manner that it can be understood easily.

$\dfrac{6}{8}$ of a blister pack of pills is equivalent to $\dfrac{3}{4}$ of it.

- **Equivalent fractions** are fractions that have different numerator and denominator but represents the same value.
- **Fraction models** are visual representation of fractions.
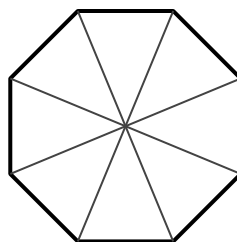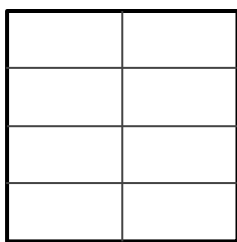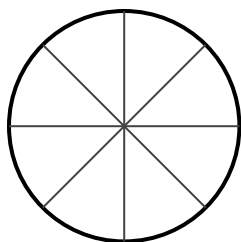
MAKING FRACTION MODELS

- A **visual fraction model** makes it easier for students to understand the concept of fraction. Below are steps on how to make a visual model of a fraction.

STEP #1: *Pick a shape, any shape, that you would like to use as a model.*
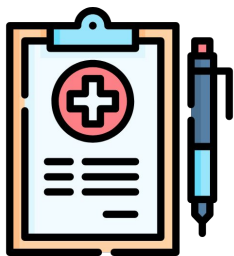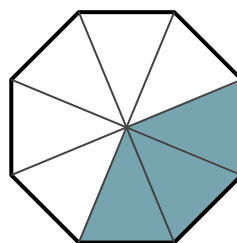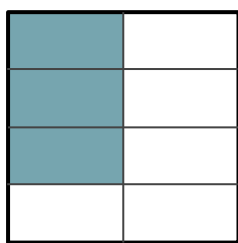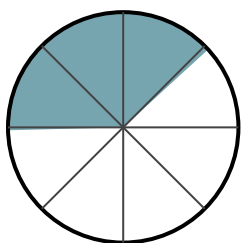
STEP #2: *Divide the shape as much parts as the denominator says.*

Example: ³⁄₈ ⟵ denominator

STEP #3: *Shade the number of parts indicated by the numerator.*

Example: ³⁄₈ numerator

This applies for proper fractions, but we still have two other kinds of fractions namely improper and mixed fractions.

MAKING FRACTION MODELS

- While a **mixed fraction** is the combination of a whole number and a proper fraction, **improper fraction** is a fraction whose numerator is greater in value than the denominator. Below is a guide on how to put them to fraction models.
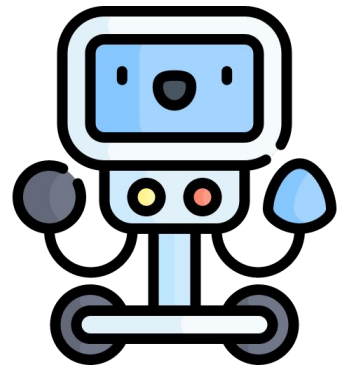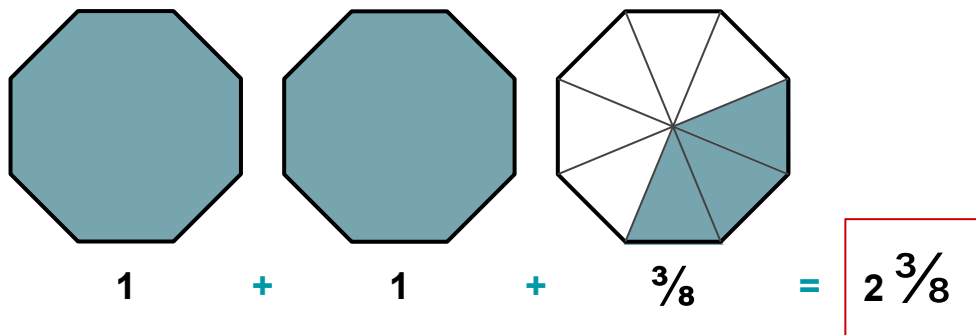
A. MAKING FRACTION MODELS OF MIXED FRACTION

STEP #1: *Add one to the whole number part of the fraction and that says the number of models you should prepare.*

Example: 2 ³⁄₈   whole number

2 + 1 =   ③   ←——— draw your chosen model 3 times

STEP #2: *Fully shade the number of models indicated by the whole number part of the mixed number.*

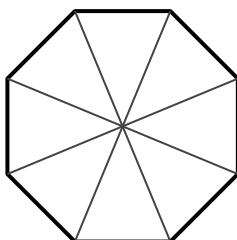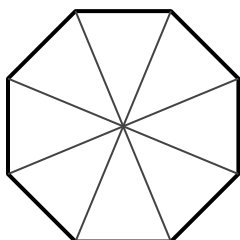**STEP #3:** *For the remaining one figure, follow the steps previously discussed for proper fractions.*

1   **+**   **1**   **+**   ³⁄₈   **=**   2 ³⁄₈

MAKING FRACTION MODELS

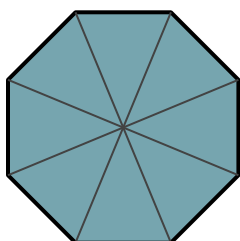**B.** MAKING FRACTION MODELS OF IMPROPER FRACTION

STEP #1: *Estimate how many models to draw and divide it equally to parts indicated by the denominator.*
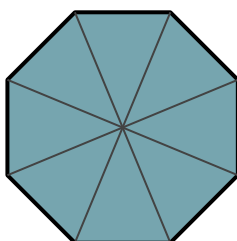
Example: $\dfrac{19}{8}$ ← denominator

expect adding more models if necessary

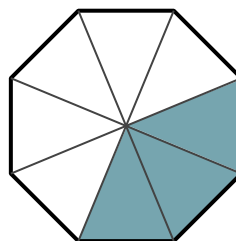**STEP #2:** *Shade portions with such number indicated by the numerator.*

8 **+** **8** **+** **3** **=** **19**

NOTE: You might want to convert an improper fraction first, so you would have to illustrate a mixed fraction. You may do so! Just remember the process of converting it.

ILLUSTRATING EQUIVALENT FRACTIONS

- As we might all know, **equivalent fractions** are fractions that show the *same value* of fractions even having unequal numerators and denominators.
- The discussion below tells how equivalent fractions are illustrated through fraction models.

Let's take the piece of pill as an example. How many of the ten equal cuts of a pill should we take to get the same amount as 4/8 of it?
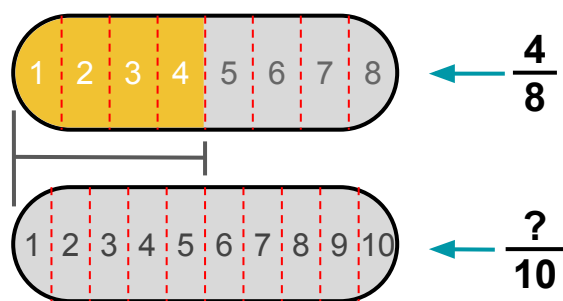
$$\frac{4}{8} = \frac{?}{10}$$

(a) You might instinctively solve for it, then illustrate the equivalent fractions <u>using fraction model to check</u> if you did it right.

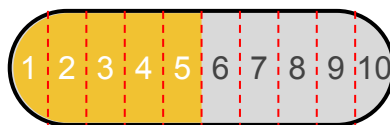$$\frac{4}{8} = \frac{?}{10} \rightarrow \frac{4}{8} = \frac{(10 \div 8) \times 4}{10} = \frac{5}{10}$$

RECALL THE PROCESS IN SOLVING FOR THE EQUIVALENT FRACTION

(b) But, you may actually do it the other way around by <u>using the fraction model to find the equivalent fraction</u>.
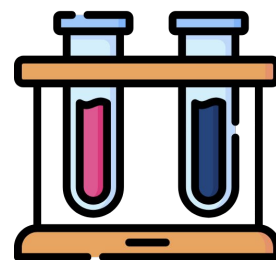

$$\frac{4}{8}$$

$$\frac{?}{10}$$

The shaded part representing 4/8, is of the same length if we would shade 5 parts of the 10 slices.
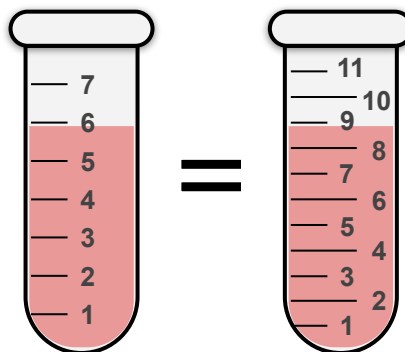
Thus, we can say that : $\frac{4}{8} = \frac{5}{10}$ →

Different liquid samples were placed in each test tube. Illustrate the following equivalent fractions that indicate the amount of liquid sample contained by each test tube.
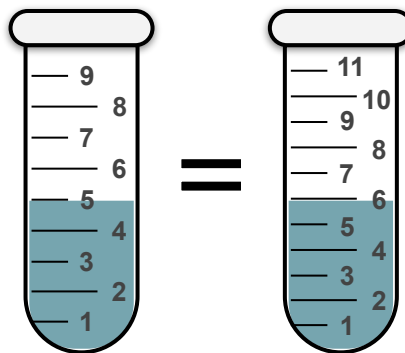
Liquid Sample A

$$\frac{6}{8} = \frac{9}{12}$$

Liquid Sample B

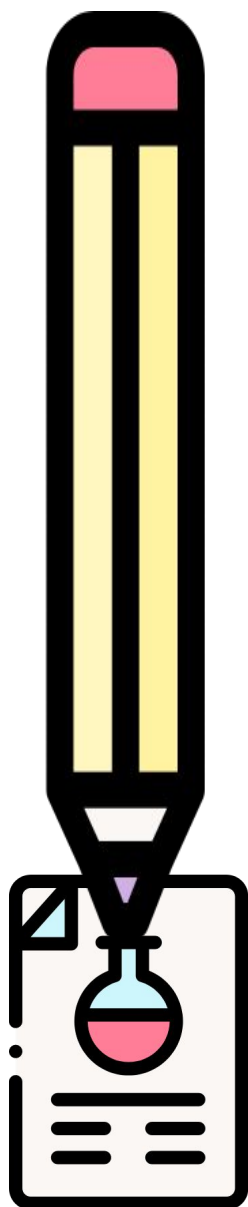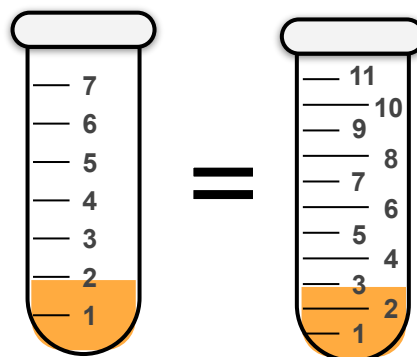$$\frac{5}{10} = \boxed{?}$$

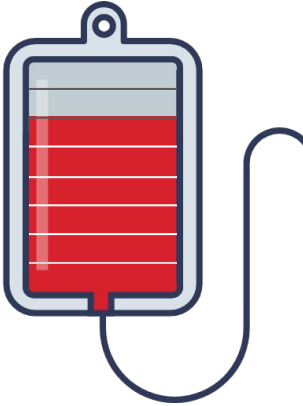**Liquid Sample C**
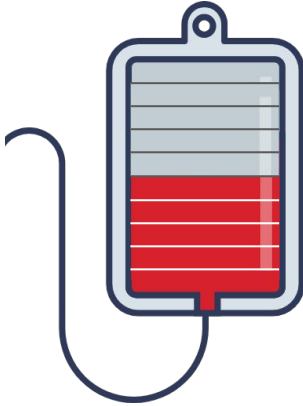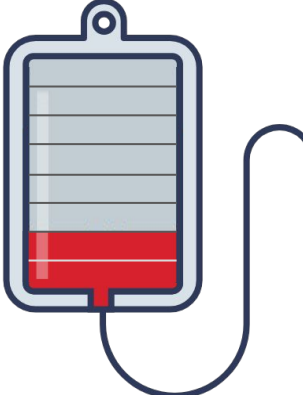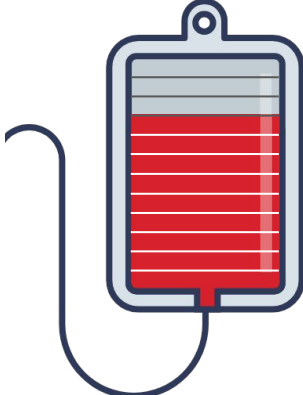
$$\boxed{?} = \frac{3}{12}$$
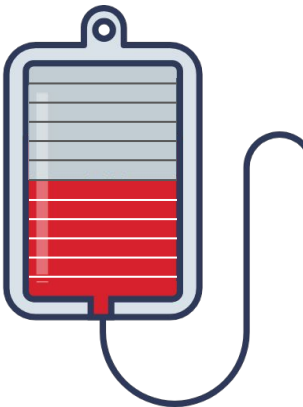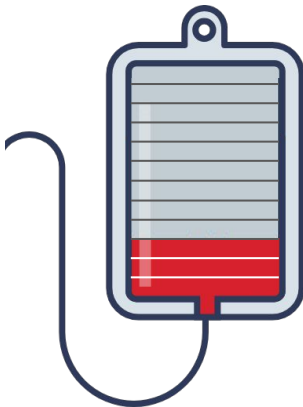
TABLE OF ACTIVITIES

1. Bloody Match
2. Medication Time!
3. Tenths of a Hundred
4. Rescue Mission
5. Cut the Bandage
6. Fill the Dropper
7. A Hundred Cure
8. Hospital Ground
9. Fever Preventi-own
10. Logic with Models

BLOODY MATCH

Blood transfusion is done when someone is lacking blood due to illness or accidents. Match the blood bags to their corresponding fractions being represented by the contained blood.
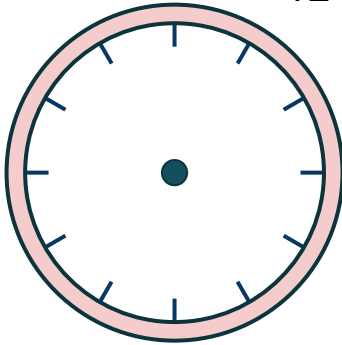
a.)

$\bullet \quad \dfrac{6}{12} = \dfrac{5}{10} \quad \bullet$ (.d

b.)

$\bullet \quad \dfrac{6}{8} = \dfrac{9}{12} \quad \bullet$ (.e

c.)

$\bullet \quad \dfrac{2}{8} = \dfrac{3}{12} \quad \bullet$ (.f

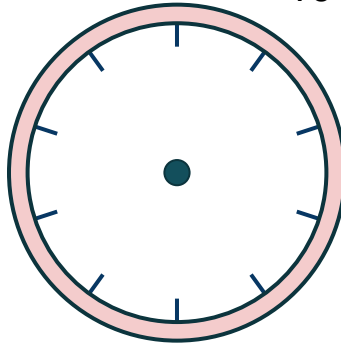Illustrating Equivalent Fractions Using Fraction Model (with denominators 8, 10, 12, 100)

MEDICATION TIME!

It is time for the patients to take their medicines! Shade the portion of the clock fraction model to illustrate the given fractions. Then, see who among the patients have the same portions of time.
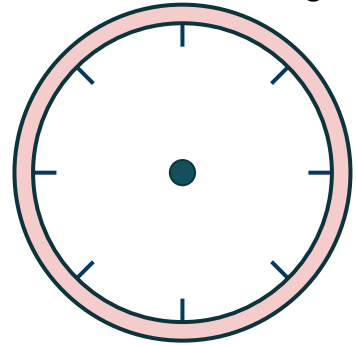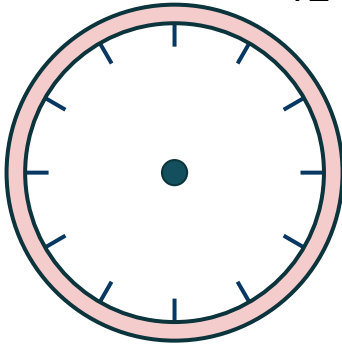
Patient A = $\dfrac{3}{12}$
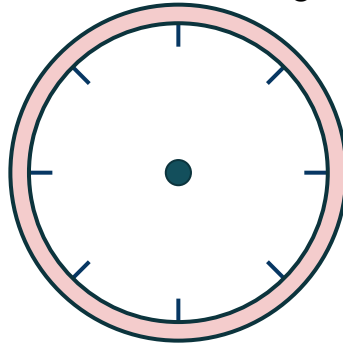
Patient B = $\dfrac{5}{10}$
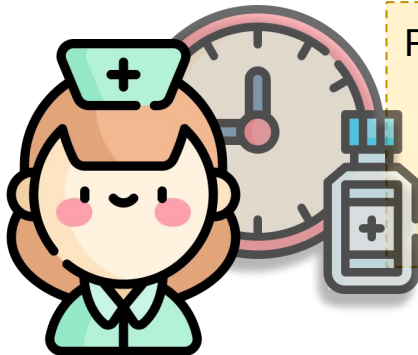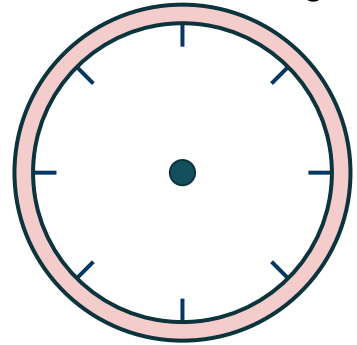
Patient C = $\dfrac{4}{8}$

Patient D = $\dfrac{6}{12}$

Patient E = $\dfrac{5}{8}$

Patient F = $\dfrac{2}{8}$

Patients taking medications at the same time:

1. Patient ___ and Patient ___

2. Patient ___ , Patient ___ and Patient ___

Illustrating Equivalent Fractions Using Fraction Model (with denominators 8, 10, 12, 100)

TENTHS OF A HUNDRED

Different juices can give us nutrients. Transfer the same amount of juices from the cylinder to the glasses as they were divided to 100 and 10 parts, respectively.
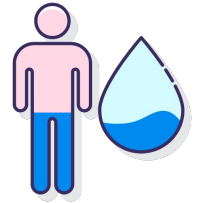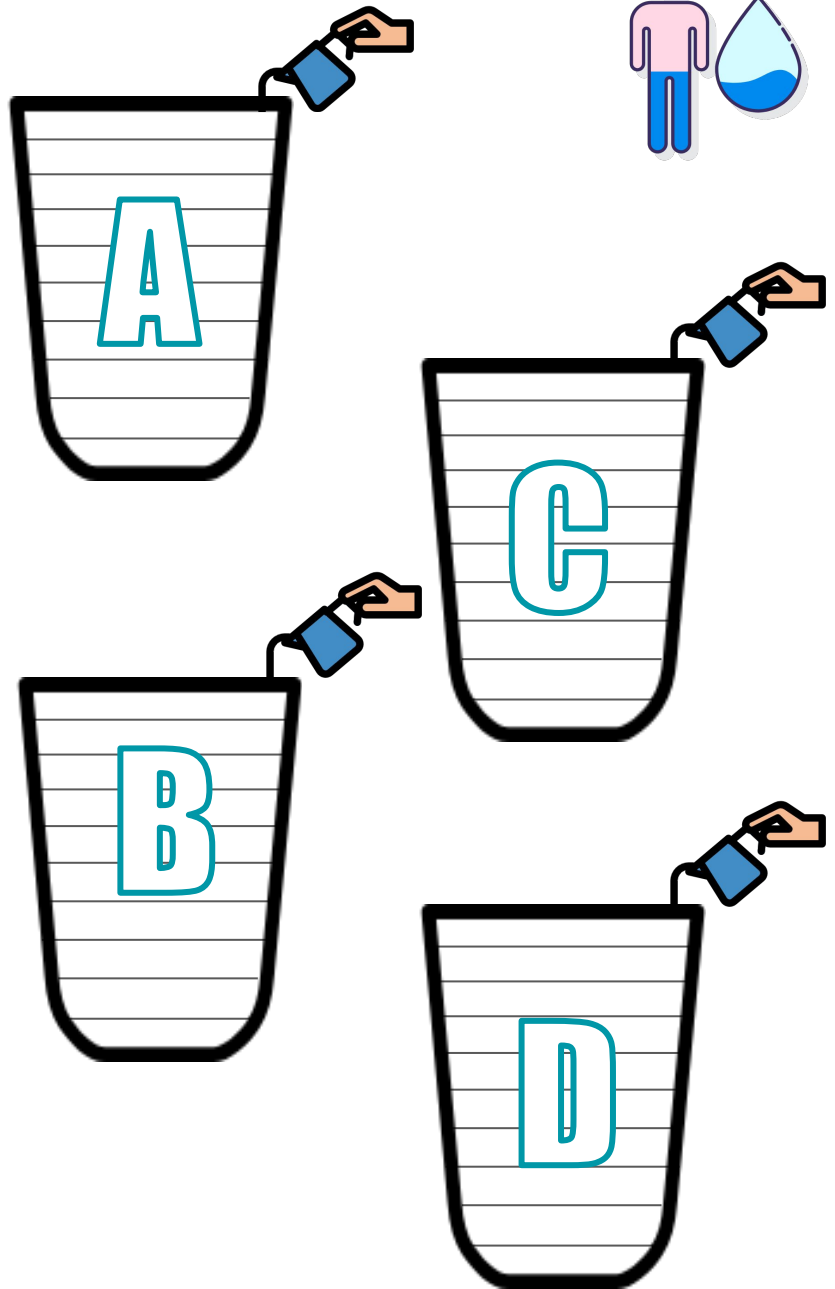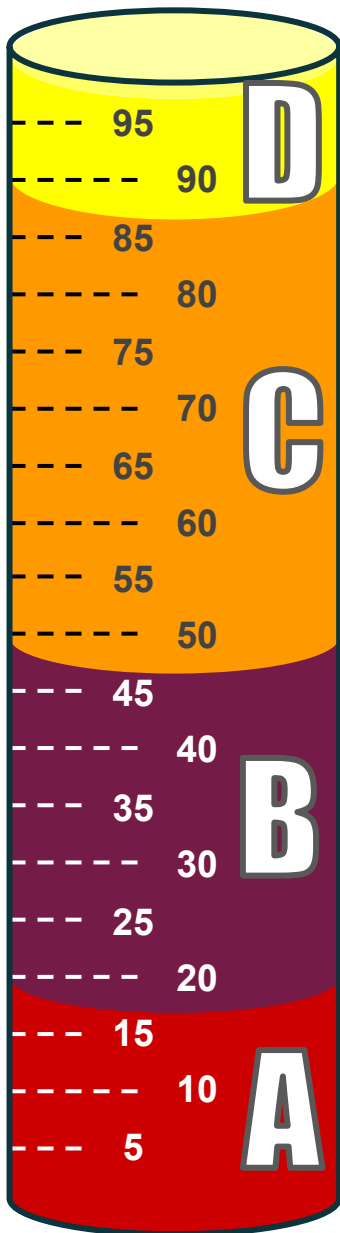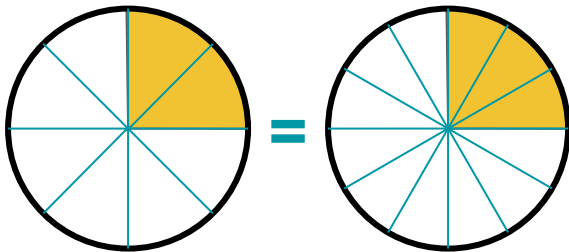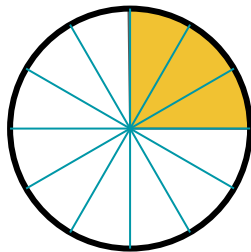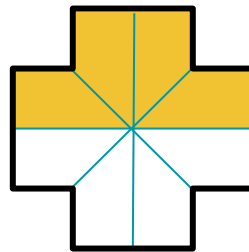
RESCUE MISSION

A car accident happened and the ambulance needs to make its way there. Trace the path the ambulance should follow by moving towards the illustrated fractions. The first one is given as an example.
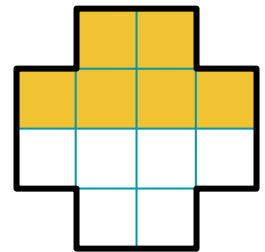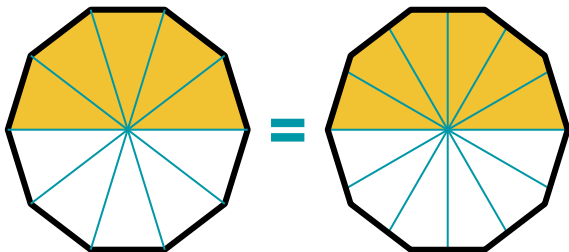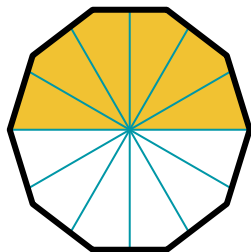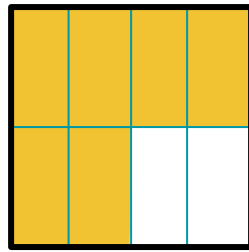
$\frac{2}{8}$

1. _ _ _ _ .

2. _ _ _ _ .

3. _ _ _ _ .

4. _ _ _ _ .

5. _ _ _ _ .

6. _ _ _ _ .

7. _ _ _ _ .
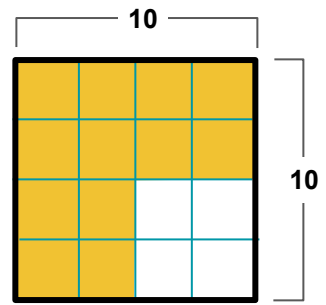
8. _ _ _ _ .

| $\frac{2}{8}$	$\frac{3}{12}$	$\frac{4}{10}$	$\frac{5}{10}$	$\frac{6}{12}$	$\frac{6}{8}$
$\frac{4}{12}$	$\frac{4}{8}$	$\frac{6}{12}$	$\frac{5}{10}$	$\frac{25}{100}$	$\frac{75}{100}$
$\frac{4}{8}$	$\frac{4}{8}$	$\frac{4}{12}$	$\frac{6}{12}$	$\frac{6}{8}$	$\frac{75}{100}$
$\frac{6}{12}$	$\frac{5}{10}$	$\frac{4}{12}$	$\frac{4}{8}$	$\frac{50}{100}$	$\frac{25}{100}$
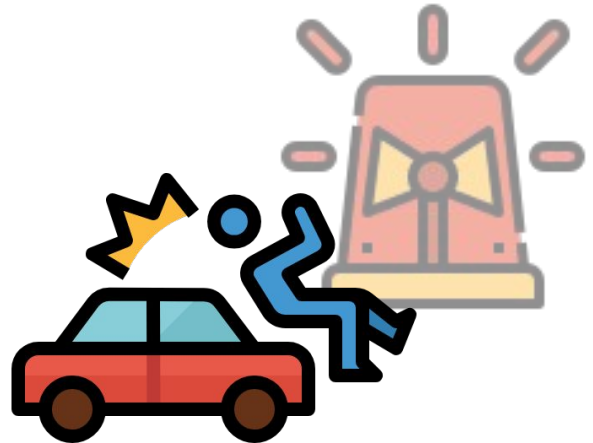
Illustrating Equivalent Fractions Using Fraction Model (with denominators 8, 10, 12, 100)
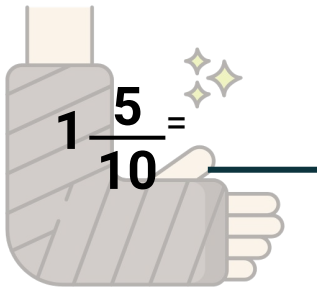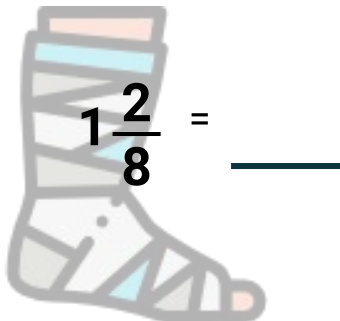
CUT THE BANDAGE

Bandages are used to bind a wound. Determine the number of portions to be taken to achieve its equal length. Use the illustrations to prove it.
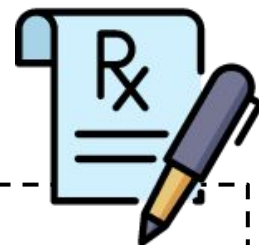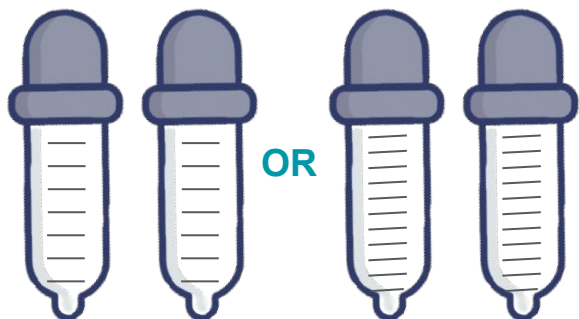
Please, help me put the bandage.
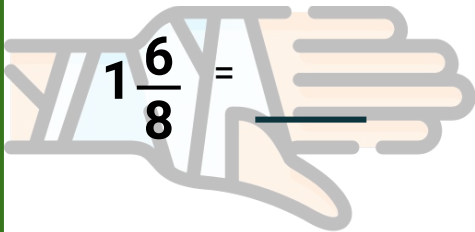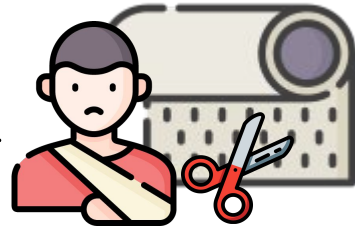
$1\dfrac{6}{8}$ = _____

$1\dfrac{5}{10}$ = _____

$1\dfrac{2}{8}$ = _____

FILL THE DROPPER

Kill the bacteria causing illness! Fill the droppers below in accordance to the doctors prescription of antibiotics.
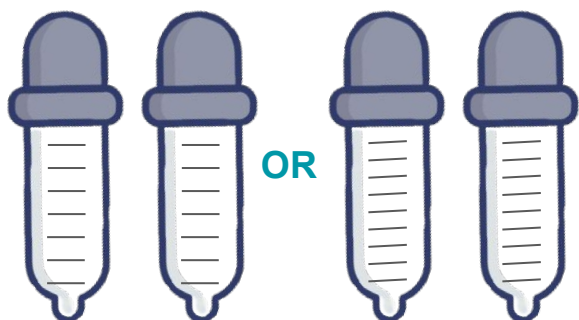
Antibiotic A:

OR

Antibiotic B:

OR

Antibiotic C:
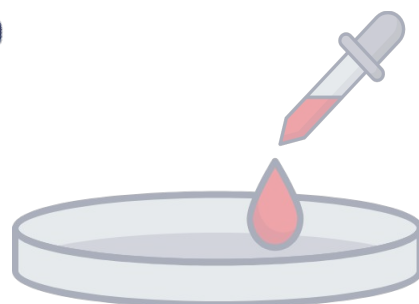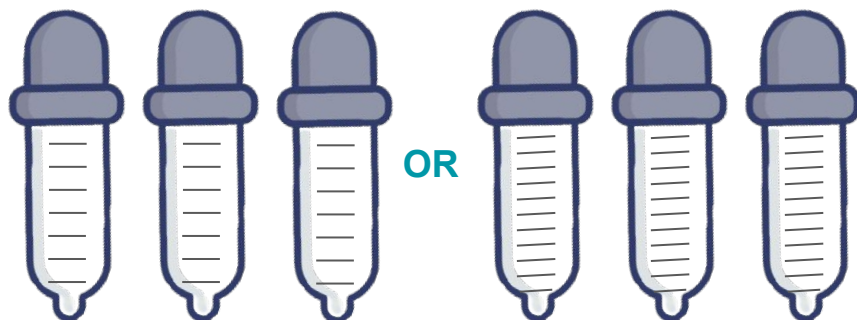
OR

R$_X$

Antibiotic A:

  10 / 8 or **15 / 12** of dropper

Antibiotic B:

  12 / 8 or **15 / 10** of dropper

Antibiotic C:

  22 / 8 or **33 / 12** of dropper

A HUNDRED CURE

A doctor prescribed different medicine tablets to a patient, that is good for a month. Find the portions of each tablet and their equivalent.
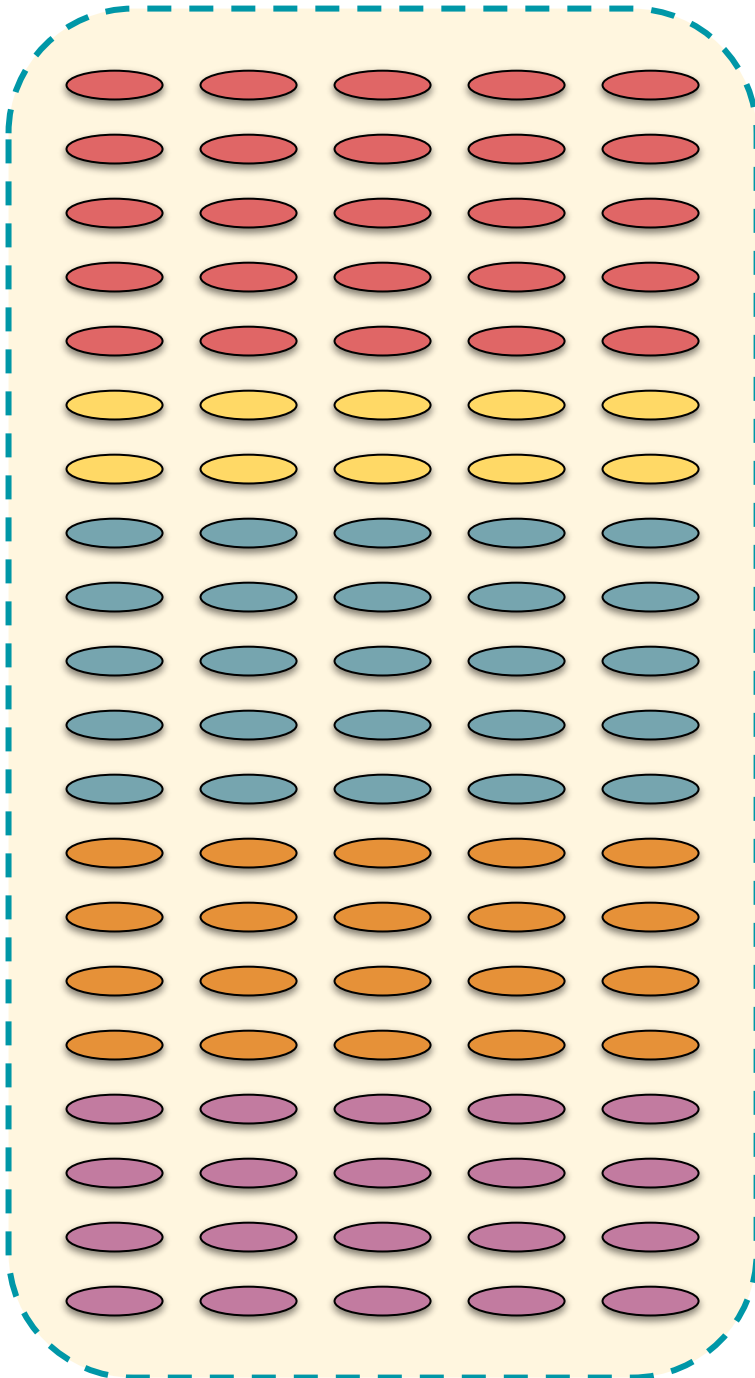
Tablet A: (red)

$$\frac{}{100} = \frac{}{12}$$

Tablet B: (yellow)

$$\frac{}{100} = \frac{}{10}$$

Tablet C: (blue)

$$\frac{}{100} = \frac{}{8}$$

Tablet D: (orange)

$$\frac{}{100} = \frac{}{10}$$
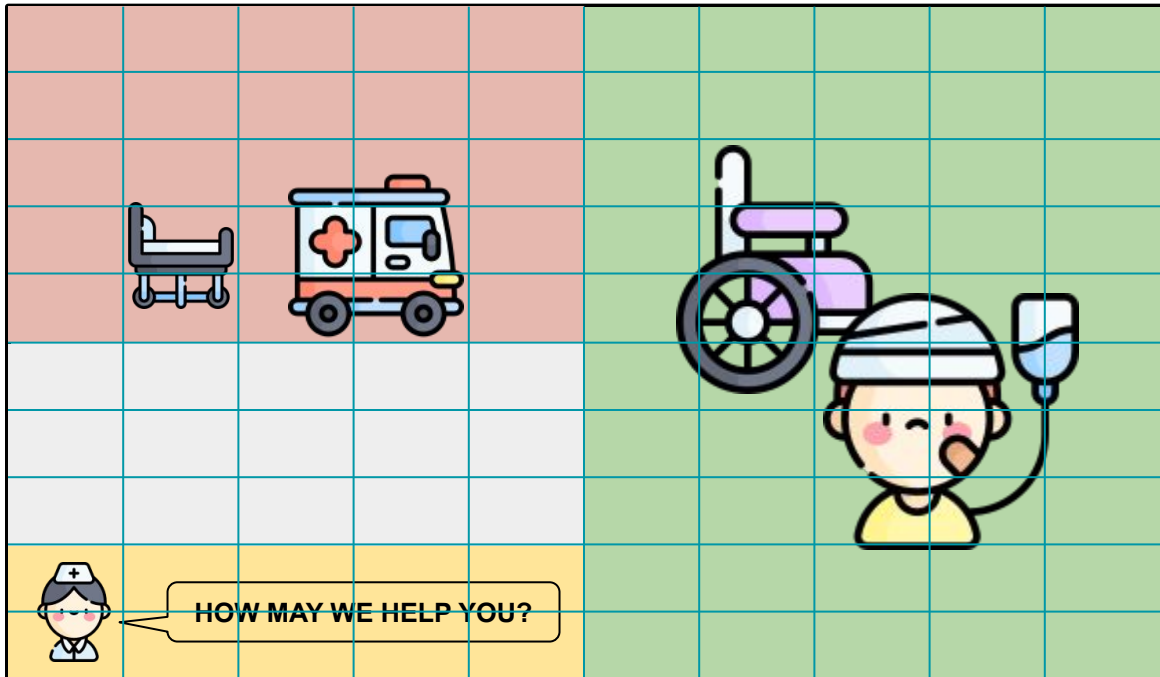
Tablet E: (purple)

$$\frac{}{100} = \frac{}{10}$$

HOSPITAL GROUND

A ground floor of a hospital is covered by one hundred tiles. Label the portion of the ground floor being allocated to specific spaces.

Layout of the Ground Floor

Reception Area

$$\frac{}{10}$$

Emergency Room

$$\frac{}{8} \text{ or } \frac{}{12}$$

Confinement Ward

$$\frac{}{8} \text{ or } \frac{}{10} \text{ or } \frac{}{12}$$

FEVER PREVENTI-OWN

Jay has a fever but he needs to deal with it himself. Help him by making your own models of the fractions stated below.

As the first step, Jay checked his temperature using a thermometer. The line indicating the temperature reached the potion of the gauge stated below.

$$\frac{6}{8} = \frac{9}{12}$$
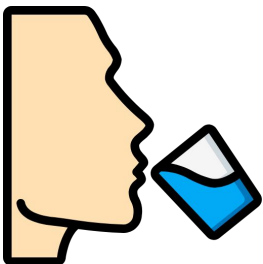
DRAW YOUR ILLUSTRATION HERE!

Jay decided to take some anti fever medicine presented in syrup. The dosage says that in his age, he should take the number of tablespoons that follows.

$$1\frac{2}{8} = 1\frac{3}{12}$$

DRAW YOUR ILLUSTRATION HERE!

Jay immediately drank some glasses of water hoping to feel at least a bit better. The amount of water he drank (in glass unit) is:

$$\frac{20}{8} = \frac{30}{12}$$

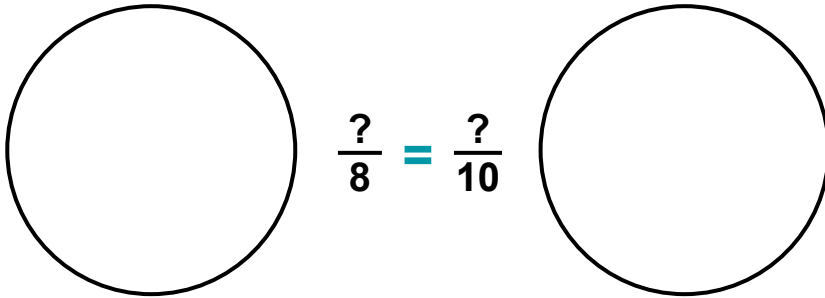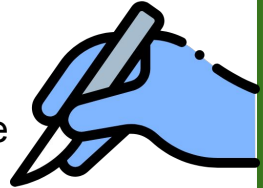DRAW YOUR ILLUSTRATION HERE!

LOGIC WITH MODELS

To make a fraction model, you need to divide your chosen model. Try to do it with the shapes below, given the denominators of the possible equivalent fractions.
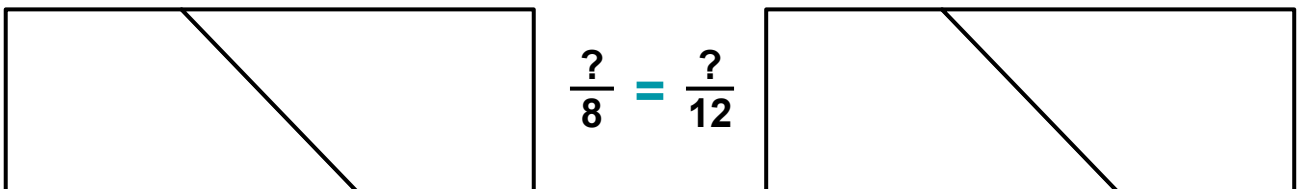
Use the scalpel to cut through the figures!

Use a **protractor** (a tool for measuring angles) to divide a circle to equal parts.

$$\frac{?}{8} = \frac{?}{10}$$

Below is a regular hexagon. A regular polygon is a polygon with all of the sides having equal length

$$\frac{?}{8} = \frac{?}{12}$$
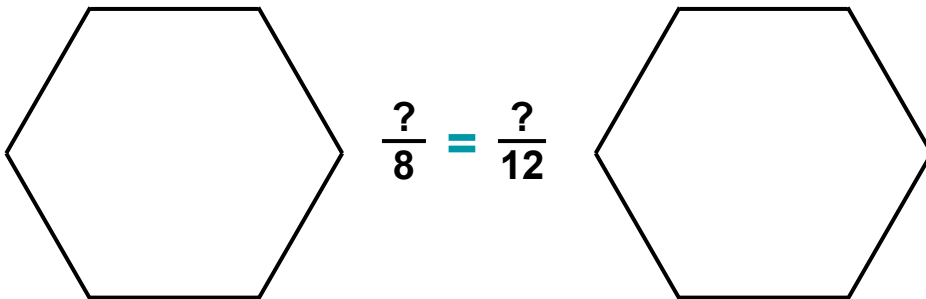
For the next item, the rectangle was divided into two which means half of the 8 and 12 divisions shall be done in one side only.
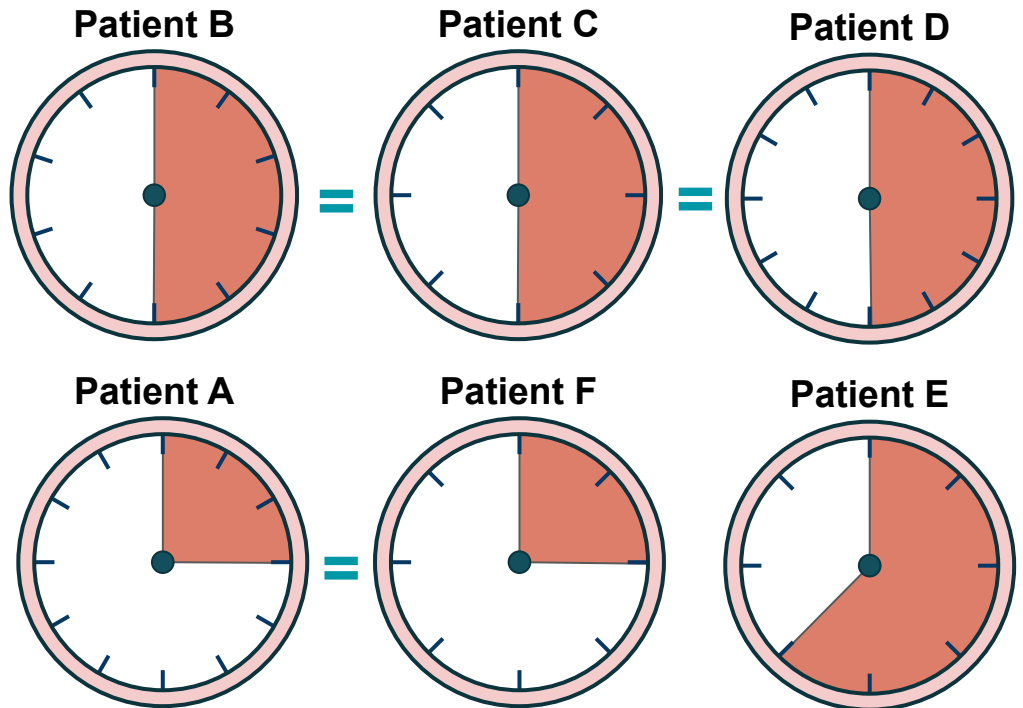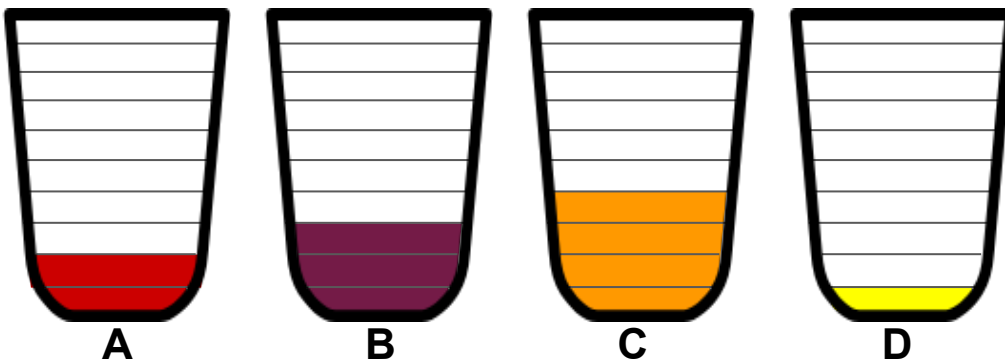
$$\frac{?}{8} = \frac{?}{12}$$

ANSWER GUIDE

Activity 1

a. 6 / 12

b. 6 / 8

c. 2 / 8

d. 3 / 12

e. 5 / 10

f. 9 / 12

Activity 2

Patient B = **Patient C** = **Patient D**

Patient A = **Patient F**   **Patient E**

1. Patient A and Patient F
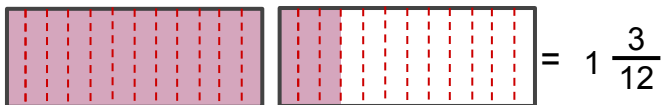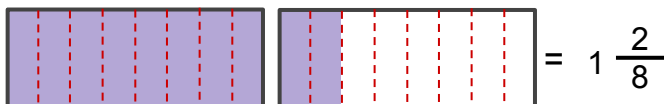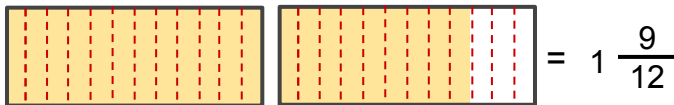2. Patient B, Patient C, and Patient D

Activity 3

A   B   C   D

Activity 4

1. 2 / 8
2. 3 / 12
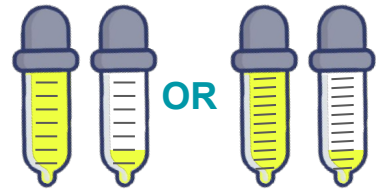3. 4 / 8
4. 6 / 12
5. 5 / 10
6. 6 / 12
7. 6 / 8
8. 75 / 100

Illustrating Equivalent Fractions Using Fraction Model (with denominators 8, 10, 12, 100)

ANSWER GUIDE

Activity 5

$= 1\frac{6}{8}$

$= 1\frac{9}{12}$

$= 1\frac{5}{10}$

$= 1\frac{4}{8}$

$= 1\frac{2}{8}$

$= 1\frac{3}{12}$
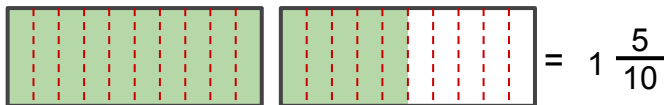
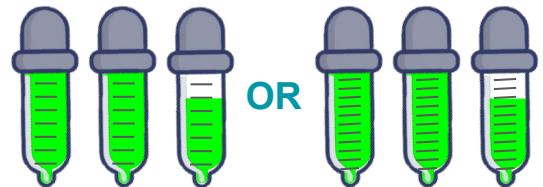## Activity 6

Antibiotic A:

 OR

Antibiotic B:

 OR

Antibiotic C:

 OR
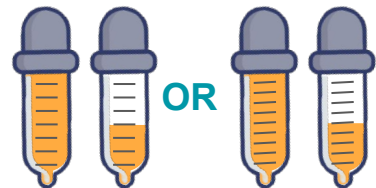
Activity 7

Tablet A: 25 / 100 =   3 / 12

Tablet B: 10 / 100 =   1 / 10

Tablet C: 25 / 100 =   4 / 8

Tablet D: 20 / 100 =   2 / 10

Tablet E: 40 / 100 =   4 / 10

Activity 8

Reception Area:
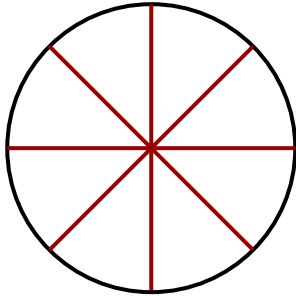   1 / 10

Emergency Room:
      2 / 8 or 3 / 12
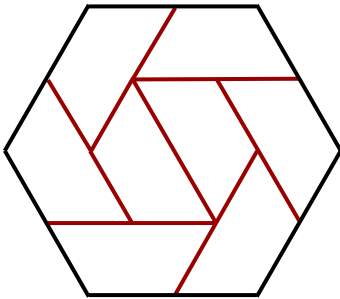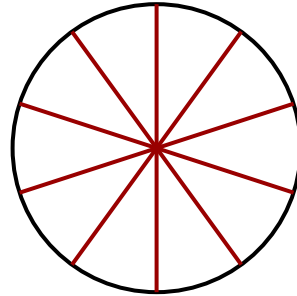
Confinement Ward:
    4 / 8 or 5 / 10 or 6 / 12

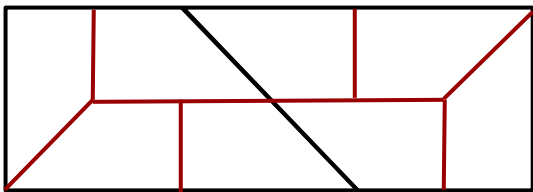Illustrating Equivalent Fractions Using Fraction Model (with denominators 8, 10, 12, 100)

Activity 10

$$\frac{?}{8} = \frac{?}{10}$$

$$\frac{?}{8} = \frac{?}{12}$$

$$\frac{?}{8} = \frac{?}{12}$$

Illustrating Equivalent Fractions Using Fraction Model (with denominators 8, 10, 12, 100)

Thank you

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