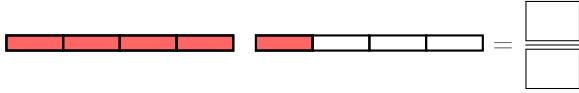


FRACTIONS

A DEFINITIONS

A.1 FINDING FRACTIONS

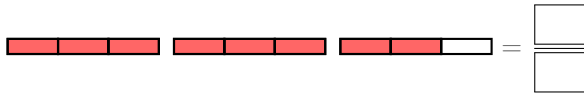
Ex 1: A bar represents 1. Find the fraction that represents the shaded part:



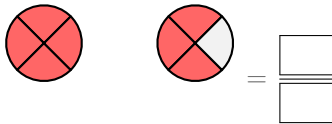
Ex 2: A bar represents 1. Find the fraction that represents the shaded part:



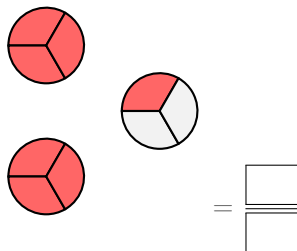
Ex 3: A bar represents 1. Find the fraction that represents the shaded part:



Ex 4: A circle represents 1. Find the fraction that represents the shaded part:



Ex 5: A circle represents 1. Find the fraction that represents the shaded part:



A.2 WRITING FRACTIONS FROM WORDS

Ex 6: Write as fraction:

one over four = $\frac{\boxed{}}{\boxed{}}$

Ex 7: Write as fraction:

three over five = $\frac{\boxed{}}{\boxed{}}$

Ex 8: Write as fraction:

three quarters = $\frac{\boxed{}}{\boxed{}}$

Ex 9: Write as fraction:

six over hundred = $\frac{\boxed{}}{\boxed{}}$

B FRACTION AS QUOTIENT

B.1 CONVERTING DIVISION TO FRACTIONS

Ex 10: Write as a fraction:

$$3 \div 2 = \frac{\boxed{}}{\boxed{}}$$

Ex 11: Write as a fraction:

$$2 \div 5 = \frac{\boxed{}}{\boxed{}}$$

Ex 12: Write as a fraction:

$$3 \div 4 = \frac{\boxed{}}{\boxed{}}$$

Ex 13: Write as a fraction:

$$5 \div 3 = \frac{\boxed{}}{\boxed{}}$$

B.2 CONVERTING FRACTIONS TO DIVISION EXPRESSIONS

Ex 14: Convert the fraction into a division expression:

$$\frac{2}{5} = \boxed{} \div \boxed{}$$

Ex 15: Convert the fraction into a division expression:

$$\frac{4}{7} = \boxed{} \div \boxed{}$$

Ex 16: Convert the fraction into a division expression:

$$\frac{3}{8} = \boxed{} \div \boxed{}$$

Ex 17: Convert the fraction into a division expression:

$$\frac{6}{9} = \boxed{} \div \boxed{}$$

B.3 CONVERTING FRACTIONS TO WHOLE NUMBERS

Ex 18: Convert the fraction into a whole number:

$$\frac{4}{2} = \boxed{}$$

Ex 19: Convert the fraction into a whole number:

$$\frac{9}{3} = \boxed{}$$

Ex 20: Convert the fraction into a whole number:

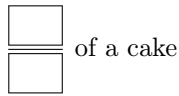
$$\frac{8}{4} = \boxed{}$$

Ex 21: Convert the fraction into a whole number:

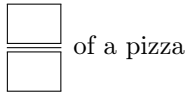
$$\frac{5}{5} = \boxed{}$$

B.4 FINDING FRACTIONS IN WORD PROBLEMS

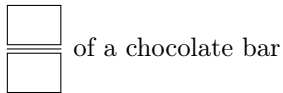
Ex 22: Four friends share 3 cakes equally. What fraction does each friend get?



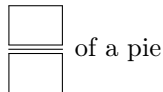
Ex 23: Five friends share 2 pizzas equally. What fraction does each friend get?



Ex 24: A couple shares 5 chocolate bars equally. What fraction of a chocolate bar does each person get?



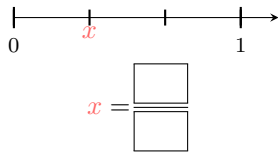
Ex 25: Six family members share 2 apple pies equally. What fraction of a pie does each family member get?



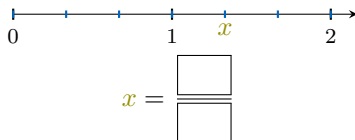
C ON THE NUMBER LINE

C.1 FINDING FRACTIONS

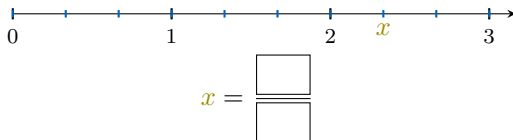
Ex 26: Find the value of x



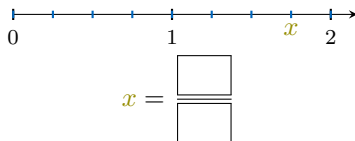
Ex 27: Find the value of x



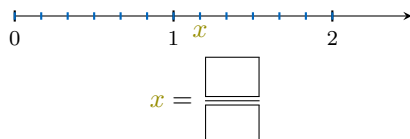
Ex 28: Find the value of x



Ex 29: Find the value of x



Ex 30: Find the value of x



D EQUIVALENT FRACTIONS

D.1 FINDING THE MISSING NUMERATOR

Ex 31:

$$\frac{2}{4} = \frac{\boxed{}}{2}$$

Ex 32:

$$\frac{9}{6} = \frac{\boxed{}}{2}$$

Ex 33:

$$\frac{5}{10} = \frac{\boxed{}}{2}$$

Ex 34:

$$\frac{16}{12} = \frac{\boxed{}}{3}$$

Ex 35:

$$\frac{4}{10} = \frac{\boxed{}}{5}$$

D.2 FINDING THE MISSING NUMERATOR

Ex 36:

$$\frac{1}{2} = \frac{\boxed{}}{4}$$

Ex 37:

$$\frac{4}{3} = \frac{\boxed{}}{15}$$

Ex 38:

$$\frac{3}{4} = \frac{\boxed{}}{12}$$

Ex 39:

$$\frac{5}{6} = \frac{\boxed{}}{12}$$

Ex 40:

$$\frac{7}{8} = \frac{\boxed{}}{32}$$

D.3 FINDING THE MISSING DENOMINATOR

Ex 41:

$$\frac{4}{10} = \frac{2}{\boxed{}}$$

Ex 42:

$$\frac{6}{12} = \frac{1}{\boxed{}}$$

Ex 43:

$$\frac{9}{6} = \frac{3}{\boxed{}}$$

Ex 44:

$$\frac{12}{10} = \frac{6}{\boxed{}}$$

D.4 FINDING THE MISSING DENOMINATOR

Ex 45:

$$\frac{2}{5} = \frac{6}{\boxed{}}$$

Ex 46:

$$\frac{2}{3} = \frac{8}{\boxed{}}$$

Ex 47:

$$\frac{3}{5} = \frac{9}{\boxed{}}$$

Ex 48:

$$\frac{4}{7} = \frac{12}{\boxed{}}$$

Ex 49:

$$\frac{5}{9} = \frac{20}{\boxed{}}$$

E SIMPLIFICATION

E.1 SIMPLIFYING FRACTIONS

Ex 50: Simplify:

$$\frac{4}{6} = \frac{\boxed{}}{\boxed{}}$$

Ex 51: Simplify:

$$\frac{24}{16} = \frac{\boxed{}}{\boxed{}}$$

Ex 52: Simplify:

$$\frac{12}{20} = \frac{\boxed{}}{\boxed{}}$$

Ex 53: Simplify:


$$\frac{30}{100} = \frac{\boxed{}}{\boxed{}}$$

Ex 54: Simplify:


$$\frac{25}{100} = \frac{\boxed{}}{\boxed{}}$$

F CROSS MULTIPLICATION


F.1 SOLVING PROPORTIONS USING CROSS-MULTIPLICATION

Ex 55:  Solve x for $\frac{12}{4} = \frac{x}{6}$:


$$x = \boxed{}$$

Ex 56:  Solve x for $\frac{11}{10} = \frac{x}{5}$:

$$x = \boxed{}$$

Ex 57:  Solve x for $\frac{12}{10} = \frac{18}{x}$:

$$x = \boxed{}$$

Ex 58:  Solve x for $\frac{27}{x} = \frac{30}{10}$:

$$x = \boxed{}$$

G ADDITION AND SUBTRACTION

G.1 ADDING AND SUBTRACTING FRACTIONS WITH COMMON DENOMINATORS

Ex 59:

$$\frac{2}{6} + \frac{3}{6} = \frac{\boxed{}}{\boxed{}}$$

Ex 60:

$$\frac{2}{3} + \frac{2}{3} = \frac{\boxed{}}{\boxed{}}$$

Ex 61:

$$\frac{4}{5} + \frac{2}{5} = \frac{\boxed{}}{\boxed{}}$$

Ex 62:

$$\frac{3}{4} - \frac{2}{4} = \frac{\boxed{}}{\boxed{}}$$

Ex 63:

$$\frac{4}{5} - \frac{3}{5} = \frac{\boxed{}}{\boxed{}}$$

Ex 64:

$$\frac{4}{3} - \frac{2}{3} = \frac{\boxed{}}{\boxed{}}$$

G.2 SOLVING REAL-WORLD PROBLEMS

Ex 65: Louis has a whole cake. He cuts it into 8 equal slices and eats 3 slices. What fraction of the whole cake remains?

$$\frac{\boxed{}}{\boxed{}} \text{ of the cake}$$

Ex 66: Today, Louis eats $\frac{1}{2}$ of a croissant. Then, Louis eats $\frac{1}{4}$ of another croissant. How much croissant did Louis eat in total?

$$\frac{\boxed{}}{\boxed{}} \text{ of a croissant}$$

Ex 67: At the beginning, there are $\frac{5}{6}$ of a cake. After eating, there are $\frac{2}{3}$ of the cake. What quantity of cake did Louis eat?

$$\frac{\boxed{}}{\boxed{}} \text{ of the cake}$$

Ex 68: At the beginning, there are $\frac{7}{8}$ of a pizza. After eating, there are $\frac{3}{4}$ of the pizza. What quantity of pizza did Louis eat?

$$\frac{\boxed{}}{\boxed{}} \text{ of the pizza}$$

Ex 69: Louis read $\frac{2}{5}$ of his book on Saturday and $\frac{3}{10}$ of his book on Sunday. How much of his book did Louis read in total?

$$\frac{\boxed{}}{\boxed{}} \text{ of the book}$$

G.3 ADDING FRACTIONS WITH UNLIKE DENOMINATORS

Ex 70: Calculate and simplify:

$$\frac{2}{3} + \frac{3}{5} = \frac{\boxed{}}{\boxed{}}$$

Ex 71: Calculate and simplify:

$$\frac{1}{2} + \frac{2}{3} = \frac{\boxed{}}{\boxed{}}$$

Ex 72: Calculate and simplify:

$$\frac{3}{2} + \frac{4}{5} = \frac{\boxed{}}{\boxed{}}$$

Ex 73: Calculate and simplify:

$$\frac{3}{4} + \frac{5}{6} = \frac{\boxed{}}{\boxed{}}$$

Ex 74: Calculate and simplify:

$$\frac{7}{8} + \frac{11}{6} = \frac{\boxed{}}{\boxed{}}$$

H MULTIPLICATION OF A FRACTION BY A NUMBER

H.1 MULTIPLYING OF FRACTIONS BY WHOLE NUMBERS

Ex 75: Calculate and simplify:

$$3 \times \frac{2}{5} = \frac{\boxed{}}{\boxed{}}$$

Ex 76: Calculate and simplify:

$$2 \times \frac{3}{4} = \frac{\boxed{}}{\boxed{}}$$

Ex 77: Calculate and simplify:

$$4 \times \frac{1}{6} = \frac{\boxed{}}{\boxed{}}$$

Ex 78: Calculate and simplify:

$$6 \times \frac{2}{9} = \frac{\boxed{}}{\boxed{}}$$

H.2 SOLVING REAL-WORLD PROBLEMS

Ex 79: Su has a big, delicious cake in front of her. Each time she eats, she takes $\frac{1}{4}$ of the cake. She does this 3 times. How much of the cake does Su eat in total?

$\frac{\boxed{}}{\boxed{}}$ of the cake

Ex 80: A baker is making mini-muffins. Each mini-muffin requires $\frac{2}{7}$ of a cup of batter. The baker wants to make 3 batches of mini-muffins. How much batter does the baker need in total?

$\frac{\boxed{}}{\boxed{}}$ of a cup of batter

Ex 81: A track is $\frac{1}{4}$ of a mile long. If a runner runs around the track 5 times, how many miles did the runner run?

$\frac{\boxed{}}{\boxed{}}$ miles

Ex 82: A recipe for cookies calls for $\frac{2}{3}$ of a cup of sugar. If you want to make 4 batches of cookies, how many cups of sugar do you need?

$\frac{\boxed{}}{\boxed{}}$ cups of sugar

I MULTIPLICATION OF FRACTIONS

I.1 MULTIPLYING OF FRACTIONS

Ex 83: Calculate and simplify:

$$\frac{1}{2} \times \frac{2}{3} = \frac{\boxed{}}{\boxed{}}$$

Ex 84: Calculate and simplify:

$$\frac{1}{2} \times \frac{3}{4} = \frac{\boxed{}}{\boxed{}}$$

Ex 85: Calculate and simplify:

$$\frac{3}{4} \times \frac{3}{5} = \frac{\boxed{}}{\boxed{}}$$

Ex 86: Calculate and simplify:

$$\frac{5}{6} \times \frac{2}{3} = \frac{\boxed{}}{\boxed{}}$$

I.2 MULTIPLYING OF FRACTIONS

Ex 87: Calculate and simplify:

$$\frac{4}{3} \times \frac{9}{5} = \frac{\boxed{}}{\boxed{}}$$

Ex 88: Calculate and simplify:

$$\frac{2}{5} \times \frac{5}{8} = \frac{\boxed{}}{\boxed{}}$$

Ex 89: Calculate and simplify:

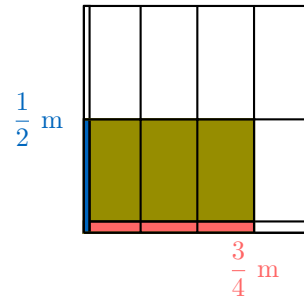
$$\frac{3}{7} \times \frac{14}{9} = \frac{\boxed{}}{\boxed{}}$$

Ex 90: Calculate and simplify:

$$\frac{8}{15} \times \frac{3}{4} = \frac{\boxed{}}{\boxed{}}$$

I.3 SOLVING REAL-WORLD PROBLEMS

Ex 91:



Calculate the area of the vegetable garden:

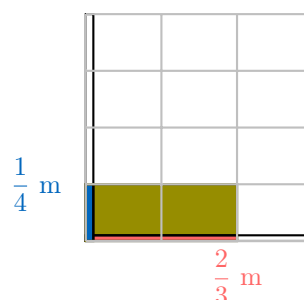
$\frac{\boxed{}}{\boxed{}}$ square meters.

Ex 92: At Tariel High School, $\frac{4}{5}$ of the students are involved in extracurricular activities. Of these students, $\frac{2}{3}$ participate in fall activities. What fraction of the total student population at Tariel High School participates in fall activities?

$\frac{\boxed{}}{\boxed{}}$ of the total students.

Ex 93: A rectangular piece of fabric is used to make a banner. The fabric is $\frac{2}{3}$ meters long and $\frac{1}{4}$ meters wide. What is the area of the banner?

$\frac{\boxed{}}{\boxed{}}$ square meters.



Ex 94: A farmer has $\frac{2}{3}$ of a field planted with corn. Of that corn section, $\frac{1}{2}$ is irrigated. What fraction of the entire field is irrigated?

$\frac{\boxed{}}{\boxed{}}$ of the field.

J DIVISION OF FRACTIONS

J.1 FINDING RECIPROCAL

Ex 95: The reciprocal of $\frac{5}{7}$ is $\frac{\boxed{}}{\boxed{}}$.

Ex 96: The reciprocal of $\frac{3}{8}$ is $\frac{\boxed{}}{\boxed{}}$.

Ex 97: The reciprocal of $\frac{7}{2}$ is $\frac{\boxed{}}{\boxed{}}$.

Ex 98: The reciprocal of 4 is $\frac{\boxed{}}{\boxed{}}$.

J.2 DIVIDING FRACTIONS

Ex 99: Calculate and simplify:

$$\frac{1}{2} \div \frac{3}{4} = \frac{\boxed{}}{\boxed{}}$$

Ex 100: Calculate and simplify:

$$\frac{2}{3} \div \frac{1}{2} = \frac{\boxed{}}{\boxed{}}$$

Ex 101: Calculate and simplify:

$$\frac{3}{5} \div \frac{2}{7} = \frac{\boxed{}}{\boxed{}}$$

Ex 102: Calculate and simplify:

$$\frac{4}{9} \div \frac{2}{3} = \frac{\boxed{}}{\boxed{}}$$

J.3 DIVIDING FRACTIONS

Ex 103: Simplify:

$$\frac{\frac{1}{2}}{\frac{3}{4}} = \frac{\boxed{}}{\boxed{}}$$

Ex 104: Simplify:

$$\frac{\frac{4}{9}}{\frac{2}{3}} = \frac{\boxed{}}{\boxed{}}$$

Ex 105: Simplify:

$$\frac{\frac{4}{3}}{\frac{5}{6}} = \frac{\boxed{}}{\boxed{}}$$

Ex 106: Simplify:

$$\frac{\frac{4}{10}}{\frac{7}{10}} = \frac{\boxed{}}{\boxed{}}$$

K SIGN RULES

K.1 SIMPLIFYING WITH RELATIVE NUMBERS

Ex 107: Simplify:

$$\frac{-15}{-30} = \boxed{}$$

Ex 108: Simplify:

$$\frac{-9}{12} = \boxed{}$$

Ex 109: Simplify:

$$\frac{-10}{-20} = \boxed{}$$

Ex 110: Simplify:

$$\frac{22}{-33} = \boxed{}$$

K.2 OPERATING WITH FRACTIONS WITH RELATIVE NUMBERS

Ex 111: Calculate and simplify:

$$\frac{1}{2} - 1 = \boxed{}$$

Ex 112: Calculate and simplify:

$$\frac{3}{4} - \frac{1}{2} = \boxed{}$$

Ex 113: Calculate and simplify:

$$\frac{2}{3} - \frac{3}{4} = \boxed{}$$

Ex 114: Calculate and simplify:

$$\frac{-2}{3} - 2 = \boxed{}$$

Ex 115: Calculate and simplify:

$$\frac{-2}{3} - \frac{-4}{3} = \boxed{}$$

L ORDER OF OPERATIONS

L.1 CALCULATING EXPRESSIONS

Ex 116: Calculate and simplify:

$$\frac{1+7}{3 \times 4} = \boxed{}$$

Ex 117: Calculate and simplify:

$$\frac{2+8}{4 \times 5} = \boxed{}$$

Ex 118: Calculate and simplify:

$$\frac{2+5}{3} + 1 = \boxed{}$$

Ex 119: Calculate and simplify:

$$\frac{1}{3 \times 2} + \frac{1}{3} = \boxed{}$$

Ex 120: Calculate and simplify:

$$\frac{1}{2} - 1 = \boxed{}$$