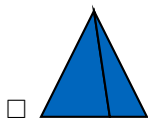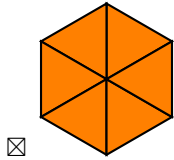# FRACTIONS

A DEFINITIONS

A.1 DETERMINING IF EQUAL PARTS

MCQ 1: Which figures are divided into equal parts?
Choose all the correct answers:

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Answer:

1) Figures are divided into equal parts if all of their parts are the same size.

2) In these figures, some parts have larger areas than others: and

3) These figures are divided into equal parts: and .

MCQ 2: Which figures are divided into equal parts?
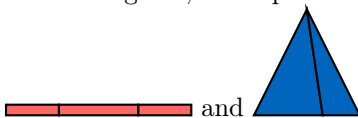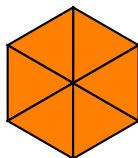**Choose all the correct answers:**

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Answer:

1) Figures are divided into equal parts if all of their parts are the same size.

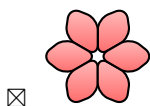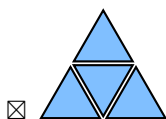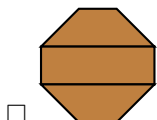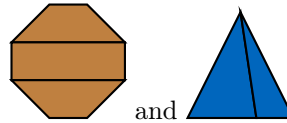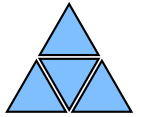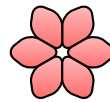2) In these figures, some parts have larger areas than others: and

3) These figures are divided into equal parts: and .

MCQ 3: Louis has a cake that he wants to share with his brother Hugo. He decides to cut the cake into two parts:

Louis picks one of the two parts.

Louis says: "I chose 1 out of the 2 parts. So, I have $\frac{1}{2}$ of the cake, and you have $\frac{1}{2}$ of the cake! It's fair."Do you agree with Louis?
Choose one answer:
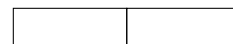
☐ Yes

☒ No

Answer:

1) The parts are not equal.

2) Since Louis takes the bigger part, he has more than $\frac{1}{2}$ of the cake.

3) It is not fair.

MCQ 4: Louis and Hugo have a cake. Their father explains the fair way to share: "One of you cuts the cake into two pieces, and the other one gets to choose his piece first."
Following their father's advice, Louis cuts the cake into two equal parts:

After Louis cuts the cake, Hugo chooses one of the two parts.
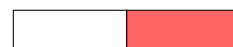
Hugo says: "I chose one of the two equal parts. So, I have $\frac{1}{2}$ of the cake and you, Louis, also have $\frac{1}{2}$ of the cake! It's fair."Do you agree with Hugo?
Choose one answer:

☒ Yes

☐ No

Answer:

1) The parts are equal.

2) Since Hugo chose one of the two equal parts, he has exactly $\frac{1}{2}$ of the cake.

3) It is fair.

A.2 FINDING FRACTIONS

MCQ 5: Which shapes have $\frac{2}{3}$ of their area shaded?
Choose all the correct answers:

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Answer:

1) The parts are not equal, so is **not** equal to $\frac{2}{3}$.

2) $\frac{2}{3} =$ because 2 of the 3 equal parts are shaded.

3) $\frac{2}{3} =$ because 2 of the 3 equal parts are shaded.

MCQ 6: Which shapes have $\frac{2}{4}$ of their area shaded?
Choose all the correct answers:

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Answer:

1) $\frac{2}{4} =$ as 2 of the 4 equal parts are shaded.

2) $\frac{2}{6} =$ as 2 of the 6 equal parts are shaded.

3) $\frac{3}{4} =$ as 3 of the 4 equal parts are shaded.

4) $\frac{2}{4} =$ as 2 of the 4 equal parts are shaded.

MCQ 7: Which shapes have $\frac{3}{8}$ of their area shaded?
Choose all answers:

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Answer:

1) $\frac{3}{9} =$ as 3 of the 9 equal parts are shaded.

2) $\frac{3}{8} =$ as 3 of the 8 equal parts are shaded.

3) $\frac{3}{8} =$ as 3 of the 8 equal parts are shaded.

4) $\frac{4}{8} =$ as 4 of the 8 equal parts are shaded.

MCQ 8: Which shapes have $\frac{2}{4}$ of their area shaded?
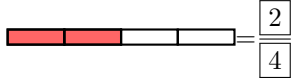**Choose all answers:**

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Answer:

1) $\frac{2}{4} =$ as 2 of the 4 equal parts are shaded.

2) $\frac{2}{4} =$ as 2 of the 4 equal parts are shaded.

3) $\frac{2}{4} =$ as 2 of the 4 equal parts are shaded.

4) $\frac{3}{4} =$ as 3 of the 4 equal parts are shaded.
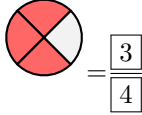
A.3 FINDING FRACTIONS IN DIAGRAMS

Ex 9: Find the fraction of the area of the shape that is shaded:

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

Answer:

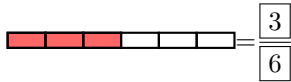1) 2 of the 4 equal parts are shaded.

2) So, $\frac{2}{4}$.

Ex 10: Find the fraction of the area of the shape that is shaded:

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

Answer:

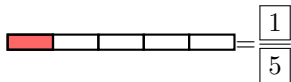1) 3 of the 4 equal parts are shaded.

2) So, $\frac{3}{4}$.

Ex 11: Find the fraction of the area of the shape that is shaded:

$$\blacksquare=\frac{3}{6}$$

Answer:

1) 3 of the 6 equal parts are shaded.

2) So, $\frac{3}{6}$.

Ex 12: Find the fraction of the area of the shape that is shaded:

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

Answer:

1) 1 of the 5 equal parts is shaded.

2) So, $\frac{1}{5}$.

Ex 13: Find the fraction of the area of the shape that is shaded:

$$=\frac{4}{8}$$
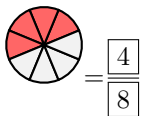
Answer:

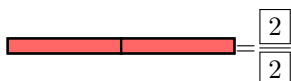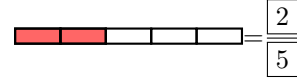1) 4 of the 8 equal parts are shaded.

2) So, $\frac{4}{8}$.

Ex 14: Find the fraction of the area of the shape that is shaded:

$$\blacksquare=\frac{2}{2}$$

Answer:

1) 2 of the 2 equal parts are shaded.

2) So, $\frac{2}{2}$.

Ex 15: Find the fraction of the area of the shape that is shaded:

$$\blacksquare=\frac{2}{5}$$

Answer:

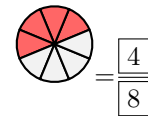1) 2 of the 5 equal parts are shaded.

2) So, $\frac{2}{5}$.

Ex 16: Find the fraction of the area of the shape that is shaded:

$$=\frac{4}{4}$$
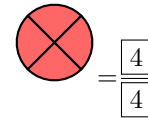
Answer:

1) 4 of the 4 equal parts are shaded.

2) So, $\frac{4}{4}$.

Ex 17: Find the fraction of the area of the shape that is shaded:

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

Answer:

1) 4 of the 8 equal parts are shaded.

2) So, $\frac{4}{8}$.

Ex 18: Find the fraction of the area of the shape that is shaded:

$$=\frac{0}{4}$$

Answer:

1) 0 of the 4 equal parts are shaded.

2) So, $\frac{0}{4}$.

A.4 FINDING FRACTIONS IN WORD PROBLEMS

Ex 19: Hugo eats 3 parts of a cake that is divided into 4 equal parts. What fraction of the cake does Hugo eat?

$$\frac{3}{4} \text{ of the cake}$$

Answer:

1) Hugo eats 3 of the 4 equal parts.

2) So, Hugo eats $\frac{3}{4}$ of the cake.

Ex 20: Liam reads 5 chapters of a book that has 8 chapters. What fraction of the book does Liam read?

$$\frac{5}{8} \text{ of the book}$$

Answer:

1) Liam reads 5 out of the 8 chapters.

2) So, Liam reads $\frac{5}{8}$ of the book.

Ex 21: Vanessa paints 5 squares on a window that has 6 equal squares. What fraction of the window did she paint?

$$\frac{5}{6} \text{ of the window}$$

Answer:

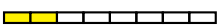1) Vanessa paints 5 out of the 6 equal parts.

2) So, Vanessa paints $\frac{5}{6}$ of the window.

Ex 22: Sophia cuts her loaf of bread into 8 equal slices. She uses 2 slices to make sandwiches. What fraction of the bread did Sophia use to make the sandwiches?

$$\frac{2}{8} \text{ of the bread}$$

Answer:

1) Sophia used 2 out of the 8 equal slices of bread.

2) So, Sophia used $\frac{2}{8}$ of the bread to make sandwiches.

A.5 FINDING NUMERATORS AND DENOMINATORS

Ex 23: State the numerator of the fraction $\frac{3}{5} =$
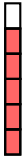
$$3$$

Answer:

- The numerator is the number of equal parts considered.

- The numerator is equal to 3.

Ex 24: State the denominator of the fraction $\frac{4}{9} =$

$$9$$

Answer:

- The denominator is the number of equal parts the unit is divided into.

- The denominator is equal to 9.

Ex 25: State the denominator of the fraction $\frac{5}{6} =$

$$6$$

Answer:

- The denominator is the number of equal parts the unit is divided into.

- The denominator is equal to 6.

Ex 26: State the numerator of the fraction $\frac{0}{3} =$
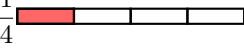
$$0$$

Answer:

- The numerator is the number of equal parts considered.

- The numerator is equal to 0.

A.6 WRITING FRACTIONS FROM WORDS

Ex 27: Write as fraction:
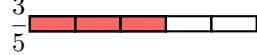
$$\text{one over four} = \boxed{\frac{\boxed{1}}{\boxed{4}}}$$

Answer:

- one over four $= \dfrac{1}{4}$

Ex 28: Write as fraction:

$$\text{three over five} = \boxed{\frac{\boxed{3}}{\boxed{5}}}$$

Answer:

- three over five $= \dfrac{3}{5}$

Ex 29: Write as fraction:

$$\text{three quarters} = \boxed{\frac{\boxed{3}}{\boxed{4}}}$$

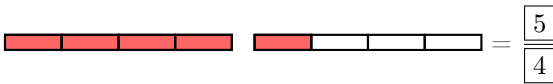*Answer:*

- three quarters $= \dfrac{3}{4}$

Ex 30: Write as fraction:

$$\text{six over hundred} = \boxed{\frac{\boxed{6}}{\boxed{100}}}$$
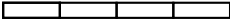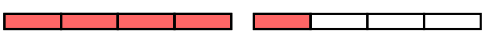
Answer:

- six over hundred (six thousandths) $= \dfrac{6}{100}$

A.7 FINDING FRACTIONS GREATER THAN 1 IN DIAGRAMS

Ex 31: A bar represents 1. Find the fraction that represents the shaded part:

 $= \boxed{\dfrac{\boxed{5}}{\boxed{4}}}$

Answer:

- A bar (1) is divided into 4 equal parts:
- 5 parts are shaded.
- So, $\dfrac{5}{4} =$

Ex 32: A bar represents 1. Find the fraction that represents the shaded part:
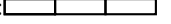
 $= \boxed{\dfrac{\boxed{5}}{\boxed{3}}}$

Answer:

- A bar (1) is divided into 3 equal parts:
- 5 parts are shaded.
- So, $\dfrac{5}{3} =$

Ex 33: A bar represents 1. Find the fraction that represents the shaded part:

 $= \boxed{\dfrac{\boxed{8}}{\boxed{3}}}$
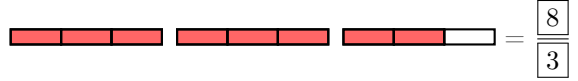
Answer:

- A bar (1) is divided into 3 equal parts:
- 8 parts are shaded.
- So, $\dfrac{8}{3} =$

Ex 34: A circle represents 1. Find the fraction that represents the shaded part:

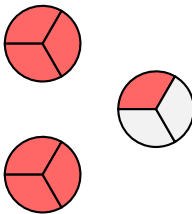 $= \boxed{\dfrac{\boxed{7}}{\boxed{4}}}$
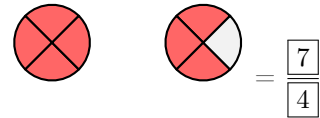
Answer:

- A circle (1) is divided into 4 equal parts.
- 7 parts are shaded.
- So, $\dfrac{7}{4} =$

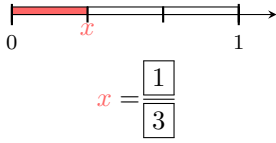**Ex 35:** A circle represents 1. Find the fraction that represents the shaded part:

 $= \boxed{\dfrac{\boxed{7}}{\boxed{3}}}$
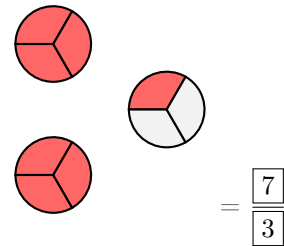
Answer:

- A circle (1) is divided into 3 equal parts.
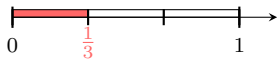- 7 parts are shaded.
- So, $\dfrac{7}{3} =$

B ON THE NUMBER LINE

B.1 FINDING FRACTIONS WITH BAR FRACTION MODEL
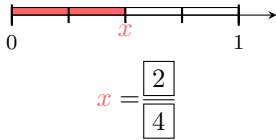
Ex 36: Find the value of x

$$x = \frac{\boxed{1}}{\boxed{3}}$$

Answer:

1) 1 is divided in 3 equals parts.

2) x is located at 1 part.

3) So, $x = \dfrac{1}{3}$.

Ex 37: Find the value of x

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

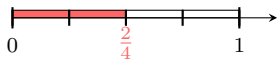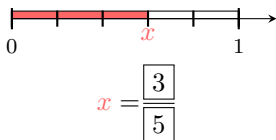*Answer:*

1) 1 is divided in 4 equals parts.

2) x is located at 2 parts.

3) So, $x = \dfrac{2}{4}$.

Ex 38: Find the value of x

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

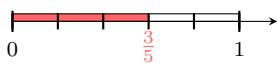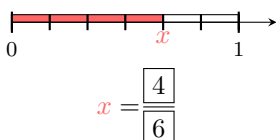*Answer:*

1) 1 is divided in 5 equals parts.

2) x is located at 3 parts.

3) So, $x = \dfrac{3}{5}$.

Ex 39: Find the value of x

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

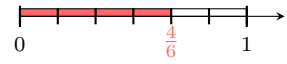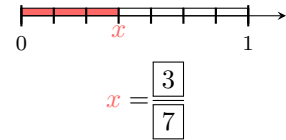*Answer:*

1) 1 is divided in 6 equals parts.

2) x is located at 4 parts.

3) So, $x = \dfrac{4}{6}$.
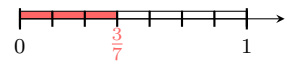
Ex 40: Find the value of x

$$x = \frac{\boxed{3}}{\boxed{7}}$$

Answer:

1) 1 is divided in 7 equals parts.

2) x is located at 3 parts.

3) So, $x = \dfrac{3}{7}$.

B.2 FINDING FRACTIONS

Ex 41: Find the value of x

$$x = \frac{\boxed{1}}{\boxed{3}}$$
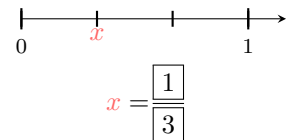
Answer:

1) 1 is divided in 3 equals parts.

2) x is located at 1 part from 0.
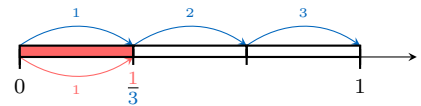
3) So, $x = \dfrac{1}{3}$.

Ex 42: Find the value of x

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

Answer:

1) 1 is divided in 4 equals parts.

2) x is located at 3 parts from 0.
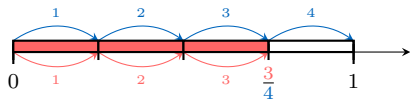
3) So, $x = \dfrac{3}{4}$.

Ex 43: Find the value of x

$$x = \dfrac{\boxed{2}}{\boxed{6}}$$

Answer:

1) 1 is divided in 6 equals parts.

2) x is located at 2 parts from 0.
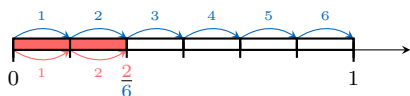
3) So, $x = \dfrac{2}{6}$.

Ex 44: Find the value of x

$$x = \dfrac{\boxed{3}}{\boxed{5}}$$

Answer:

1) 1 is divided in 5 equals parts.

2) x is located at 3 parts from 0.
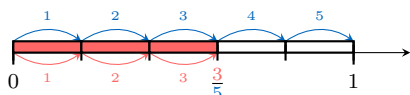
3) So, $x = \dfrac{3}{5}$.

B.3 FINDING FRACTIONS GREATER THAN 1

Ex 45: Find the value of x

$$x = \dfrac{\boxed{4}}{\boxed{3}}$$

Answer:

- 1 is divided in 3 equals parts.

- x is located at 4 parts from 0.
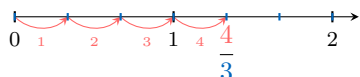
- So, $x = \dfrac{4}{3}$.

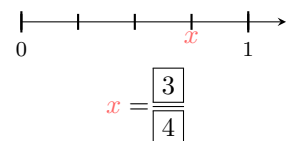**Ex 46:** Find the value of x

$$x = \dfrac{\boxed{7}}{\boxed{3}}$$

Answer:

- 1 is divided in 3 equal parts.

- x is located at 7 parts from 0.
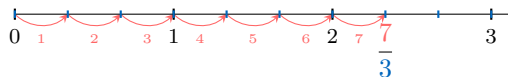
- So, $x = \dfrac{7}{3}$.

Ex 47: Find the value of x

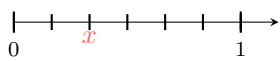$$x = \dfrac{\boxed{7}}{\boxed{4}}$$

Answer:

- 1 is divided in 4 equal parts.

- x is located at 7 parts from 0.
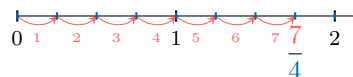
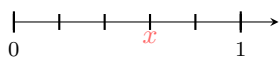- So, $x = \dfrac{7}{4}$.

Ex 48: Find the value of x

$$x = \dfrac{\boxed{7}}{\boxed{6}}$$

Answer:

- 1 is divided into 6 equal parts.

- x is located at 7 parts from 0.
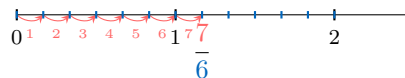
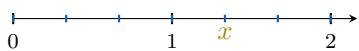

- So, $x = \dfrac{7}{6}$.

Ex 49: Find the value of x

$$x = \dfrac{\boxed{8}}{\boxed{5}}$$

Answer:

- 1 is divided into 5 equal parts.

- x is located at 8 parts from 0.
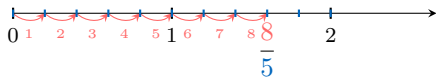
- So, $x = \dfrac{8}{5}$.
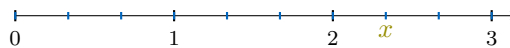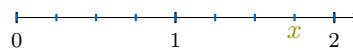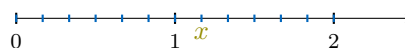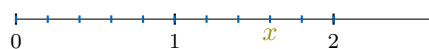
Ex 50: Find the value of x
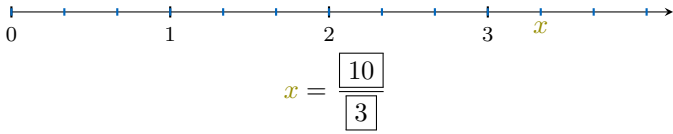
$$x = \dfrac{\boxed{10}}{\boxed{3}}$$

Answer:

- 1 is divided into 3 equal parts.

- x is located at 10 parts from 0.
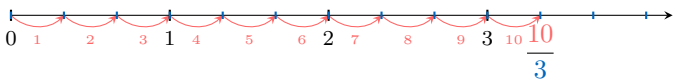
- So, $x = \dfrac{10}{3}$.

C EQUIVALENT FRACTIONS

C.1 IDENTIFYING EQUIVALENT FRACTIONS

MCQ 51: Find the equal fraction of $\dfrac{1}{2} = $

Choose the correct answer:

☐ $\dfrac{3}{4} = $

☐ $\dfrac{1}{4} = $

☒ $\dfrac{2}{4} = $

Answer:

- $\dfrac{1}{2} = $ is not equal to $\dfrac{3}{4} = $

- $\dfrac{1}{2} = $ is not equal to $\dfrac{1}{4} = $

- $= \quad \dfrac{1}{2} \quad = \quad \dfrac{2}{4} \quad = $

MCQ 52: Find the equal fraction of $\dfrac{2}{3} = $

Choose the correct answer:

☐ $\dfrac{2}{4} = $

☒ $\dfrac{4}{6} = $

☐ $\dfrac{5}{6} = $

Answer:

- $\dfrac{2}{3} = $ is not equal to $\dfrac{2}{4} = $

- $= \quad \dfrac{2}{3} \quad = \quad \dfrac{4}{6} \quad = $

- $\dfrac{2}{3} = $ is not equal to $\dfrac{5}{6} = $

MCQ 53: Find the equal fraction of $\dfrac{1}{2} = $

Choose the correct answer:

☒ $\dfrac{3}{6} = $

☐ $\dfrac{2}{6} = $

☐ $\dfrac{4}{6} = $

Answer:

- $= \quad \dfrac{1}{2} \quad = \quad \dfrac{3}{6} \quad = $

- $\dfrac{1}{2} = $ is not equal to $\dfrac{2}{6} = $

- $\dfrac{1}{2} = $ is not equal to $\dfrac{4}{6} = $

MCQ 54: Find the equal fraction of $\dfrac{2}{3} = $

Choose the correct answer:

☐ $\dfrac{5}{9} = $

⊠ $\frac{6}{9}$ =

☐ $\frac{7}{9}$ =

Answer:

• $\frac{2}{3}$ = is not equal to $\frac{5}{9}$ =

• = $\frac{2}{3}$ $\xrightarrow{\times 3}$ $=$ $\frac{6}{9}$ $\xrightarrow{\times 3}$ =

• $\frac{2}{3}$ = is not equal to $\frac{7}{9}$ =

C.2 IDENTIFYING EQUIVALENT FRACTIONS

MCQ 55: Find the equal fraction of $\frac{1}{2}$

Choose the correct answer:

☐ $\frac{3}{4}$

☐ $\frac{1}{4}$

⊠ $\frac{2}{4}$

Answer:

• $\frac{1}{2}$ = is not equal to $\frac{3}{4}$ =

• $\frac{1}{2}$ = is not equal to $\frac{1}{4}$ =

• = $\frac{1}{2}$ $\xrightarrow{\times 2}$ $=$ $\frac{2}{4}$ $\xrightarrow{\times 2}$ =

MCQ 56: Find the equal fraction of $\frac{2}{3}$

Choose the correct answer:

☐ $\frac{2}{4}$

⊠ $\frac{4}{6}$

☐ $\frac{5}{6}$

Answer:

• $\frac{2}{3}$ = is not equal to $\frac{2}{4}$ =

• = $\frac{2}{3}$ $\xrightarrow{\times 2}$ $=$ $\frac{4}{6}$ $\xrightarrow{\times 2}$ =

• $\frac{2}{3}$ = is not equal to $\frac{5}{6}$ =

MCQ 57: Find the equal fraction of $\frac{1}{2}$

Choose the correct answer:

⊠ $\frac{3}{6}$

☐ $\frac{2}{6}$

☐ $\frac{4}{6}$

Answer:

• = $\frac{1}{2}$ $\xrightarrow{\times 3}$ $=$ $\frac{3}{6}$ $\xrightarrow{\times 3}$ =

• $\frac{1}{2}$ = is not equal to $\frac{2}{6}$ =

• $\frac{1}{2}$ = is not equal to $\frac{4}{6}$ =

MCQ 58: Find the equal fraction of $\frac{2}{3}$

Choose the correct answer:

☐ $\frac{5}{9}$

⊠ $\frac{6}{9}$

☐ $\frac{7}{9}$

Answer:

• $\frac{2}{3}$ = is not equal to $\frac{5}{9}$ =

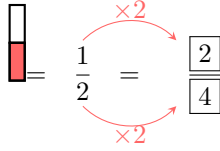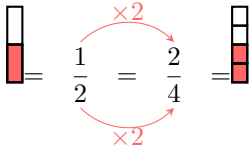• = $\frac{2}{3}$ $\xrightarrow{\times 3}$ $=$ $\frac{6}{9}$ $\xrightarrow{\times 3}$ =

• $\frac{2}{3}$ = is not equal to $\frac{7}{9}$ =

C.3 WRITING EQUIVALENT FRACTIONS

Ex 59:

$$\frac{1}{2} \xrightarrow{\times 2} \frac{2}{4} \xleftarrow{\times 2}$$

Answer:

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

Ex 60:

$$= \frac{2}{3} \xrightarrow{\times 2} \frac{4}{6} \xleftarrow{\times 2}$$

Answer:

$$= \frac{2}{3} = \frac{4}{6} =$$

Ex 61:

$$= \frac{2}{3} \xrightarrow{\times 3} \frac{6}{9} \xleftarrow{\times 3}$$

Answer:

$$= \frac{2}{3} = \frac{6}{9} =$$

Ex 62:

$$= \frac{3}{4} \xrightarrow{\times 3} \frac{9}{12} \xleftarrow{\times 3}$$

Answer:

$$= \frac{3}{4} = \frac{9}{12} =$$

Ex 63:

$$= \frac{2}{5} \xrightarrow{\times 2} \frac{4}{10} \xleftarrow{\times 2}$$

Answer:

$$= \frac{2}{5} = \frac{4}{10} =$$
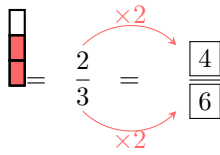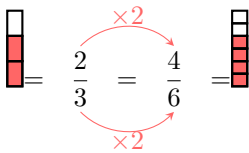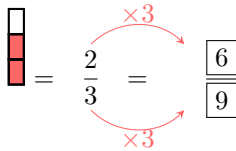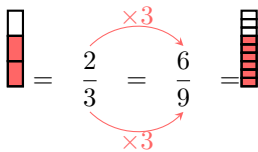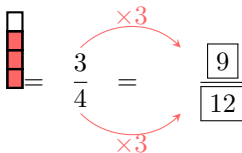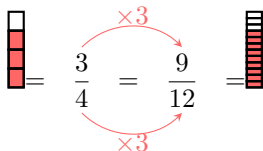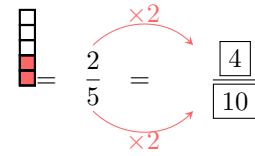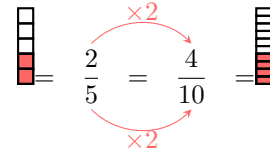
C.4 FINDING THE MISSING NUMERATOR

Ex 64:

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

Answer:

- $$= \frac{1}{2} \xrightarrow{\times 2} \frac{2}{4} \xleftarrow{\times 2} =$$
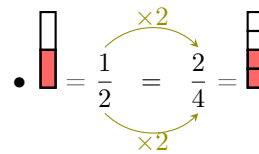
- The second denominator 4 is 2 times the first denominator 2.

- To keep the fractions equivalent, the numerator must also be multiplied by 2.

- This means: $1 \times 2 = 2$, so the missing numerator is 2.

Ex 65:

$$\frac{2}{3} = \frac{6}{9}$$

Answer:

- $$= \frac{2}{3} \xrightarrow{\times 3} \frac{6}{9} \xleftarrow{\times 3} =$$

- The second denominator 9 is 3 times the first denominator 3.

- To keep the fractions equivalent, the numerator must also be multiplied by 3.

- This means: $2 \times 3 = 6$, so the missing numerator is 6.

Ex 66:

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

Answer:

- $$= \frac{3}{2} \xrightarrow{\times 4} \frac{12}{8} =$$

- The second denominator 8 is 4 times the first denominator 2.

- To keep the fractions equivalent, the numerator must also be multiplied by 4.

- This means: $3 \times 4 = 12$, so the missing numerator is 12.

Ex 67:

$$\frac{5}{4} = \frac{\boxed{15}}{12}$$

Answer:

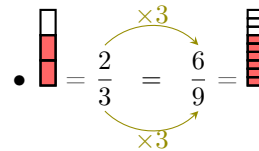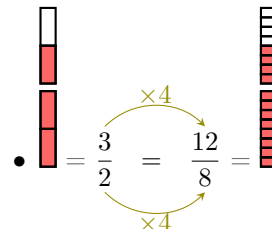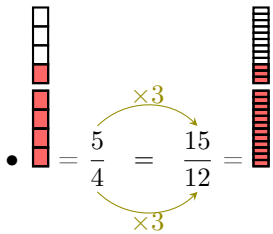- $\frac{5}{4} = \frac{15}{12}$ (with $\times 3$ shown top and bottom)
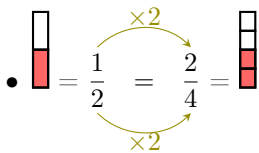
- The second denominator 12 is 3 times the first denominator 4.

- To keep the fractions equivalent, the numerator must also be multiplied by 3.

- This means: $5 \times 3 = 15$, so the missing numerator is 15.

C.5 FINDING THE MISSING DENOMINATOR

Ex 68:

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

Answer:

- $\frac{1}{2} = \frac{2}{4}$ (with $\times 2$ shown top and bottom)

- The second numerator 2 is 2 times the first numerator 1.

- To keep the fractions equivalent, the denominator must also be multiplied by 2.

- This means: $2 \times 2 = 4$, so the missing denominator is 4.

Ex 69:

$$\frac{2}{3} = \frac{4}{\boxed{6}}$$

Answer:

- $\frac{2}{3} = \frac{4}{6}$ (with $\times 2$ shown top and bottom)

- The second numerator 4 is 2 times the first numerator 2.

- To keep the fractions equivalent, the denominator must also be multiplied by 2.

- This means: $3 \times 2 = 6$, so the missing denominator is 6.

Ex 70:

$$\frac{1}{2} = \frac{3}{\boxed{6}}$$

Answer:

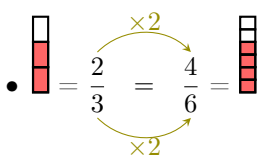- $\frac{1}{2} = \frac{3}{6}$ (with $\times 3$ shown top and bottom)

- The second numerator 3 is 3 times the first numerator 1.

- To keep the fractions equivalent, the denominator must also be multiplied by 3.

- This means: $2 \times 3 = 6$, so the missing denominator is 6.

Ex 71:

$$\frac{2}{5} = \frac{6}{\boxed{15}}$$

Answer:

- $\frac{2}{5} = \frac{6}{15}$ (with $\times 3$ shown top and bottom)
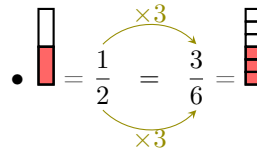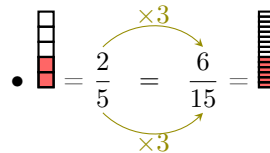
- The second numerator 6 is 3 times the first numerator 2.

- To keep the fractions equivalent, the denominator must also be multiplied by 3.

- This means: $5 \times 3 = 15$, so the missing denominator is 15.

D ADDITION AND SUBTRACTION
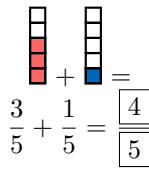
D.1 ADDING FRACTIONS WITH COMMON DENOMINATORS

Ex 72:

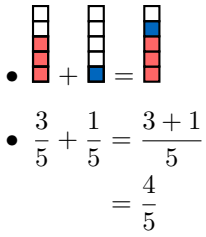$$\frac{1}{4} + \frac{2}{4} = \frac{\boxed{3}}{\boxed{4}}$$

Answer:

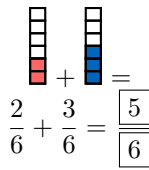- $\frac{1}{4} + \frac{2}{4} = \frac{1+2}{4}$
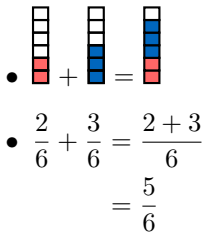
$$= \frac{3}{4}$$

Ex 73:

$$\frac{3}{5} + \frac{1}{5} = \boxed{\frac{4}{5}}$$

Answer:

- $\blacksquare + \blacksquare = \blacksquare$

- $\dfrac{3}{5} + \dfrac{1}{5} = \dfrac{3+1}{5}$

  $\qquad\qquad = \dfrac{4}{5}$

Ex 74:

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

Answer:

- $\blacksquare + \blacksquare = \blacksquare$

- $\dfrac{2}{6} + \dfrac{3}{6} = \dfrac{2+3}{6}$

  $\qquad\qquad = \dfrac{5}{6}$

Ex 75:

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

Answer:

- $\blacksquare + \blacksquare = \blacksquare$

- $\dfrac{2}{3} + \dfrac{2}{3} = \dfrac{2+2}{3}$

  $\qquad\qquad = \dfrac{4}{3}$

Ex 76:

$$\frac{4}{5} + \frac{2}{5} = \boxed{\frac{6}{5}}$$

Answer:

- $\blacksquare + \blacksquare = \blacksquare$

- $\dfrac{4}{5} + \dfrac{2}{5} = \dfrac{4+2}{5}$

  $\qquad\qquad = \dfrac{6}{5}$
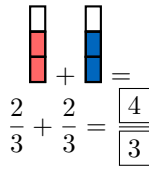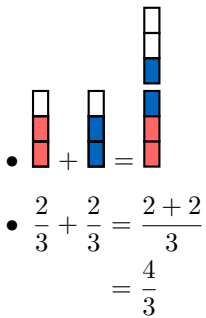
D.2 ADDING FRACTIONS WITH COMMON DENOMINATORS

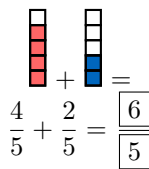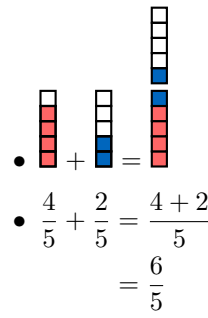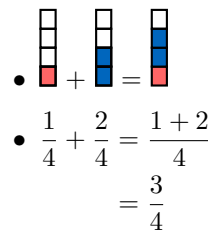**Ex 77:**

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

Answer:

- $\blacksquare + \blacksquare = \blacksquare$

- $\dfrac{1}{4} + \dfrac{2}{4} = \dfrac{1+2}{4}$

  $\qquad\qquad = \dfrac{3}{4}$

Ex 78:

$$\frac{3}{5} + \frac{1}{5} = \boxed{\frac{4}{5}}$$

Answer:

- $\blacksquare + \blacksquare = \blacksquare$

- $\dfrac{3}{5} + \dfrac{1}{5} = \dfrac{3+1}{5}$

  $\qquad\qquad = \dfrac{4}{5}$
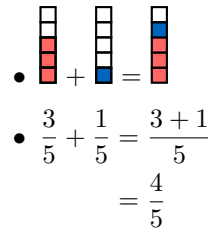
Ex 79:

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

Answer:

- $\blacksquare + \blacksquare = \blacksquare$

- $\dfrac{2}{6} + \dfrac{3}{6} = \dfrac{2+3}{6}$

  $\qquad\qquad = \dfrac{5}{6}$
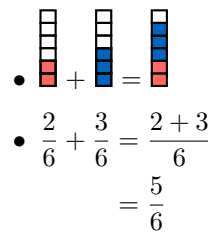
Ex 80:

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

Answer:

$$\bullet \quad \blacksquare + \blacksquare = \blacksquare$$

$$\bullet \quad \frac{2}{3} + \frac{2}{3} = \frac{2+2}{3}$$
$$= \frac{4}{3}$$

Ex 81:

$$\frac{4}{5} + \frac{2}{5} = \boxed{\frac{6}{5}}$$

Answer:

$$\bullet \quad \blacksquare + \blacksquare = \blacksquare$$

$$\bullet \quad \frac{4}{5} + \frac{2}{5} = \frac{4+2}{5}$$
$$= \frac{6}{5}$$

D.3 SUBTRACTING FRACTIONS WITH COMMON DENOMINATORS

Ex 82:

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

Answer:

$$\bullet \quad \blacksquare - \blacksquare = \boxtimes$$

$$\bullet \quad \frac{3}{4} - \frac{2}{4} = \frac{3-2}{4}$$
$$= \frac{1}{4}$$

Ex 83:

$$\blacksquare - \blacksquare =$$
$$\frac{4}{5} - \frac{3}{5} = \boxed{\frac{1}{5}}$$

Answer:

$$\bullet \quad \blacksquare - \blacksquare = \boxtimes$$

$$\bullet \quad \frac{4}{5} - \frac{3}{5} = \frac{4-3}{5}$$
$$= \frac{1}{5}$$

Ex 84:

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

Answer:

$$\bullet \quad \blacksquare - \blacksquare = \boxtimes$$

$$\bullet \quad \frac{3}{4} - \frac{1}{4} = \frac{3-1}{4}$$
$$= \frac{2}{4}$$

Ex 85:

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

Answer:

$$\bullet \quad \blacksquare - \blacksquare = \boxtimes$$

$$\bullet \quad \frac{4}{3} - \frac{2}{3} = \frac{4-2}{3}$$
$$= \frac{2}{3}$$

Ex 86:

$$\blacksquare - \blacksquare =$$
$$\frac{7}{6} - \frac{2}{6} = \boxed{\frac{5}{6}}$$

Answer:

$$\bullet \quad \blacksquare - \blacksquare = \boxtimes$$

$$\bullet \quad \frac{7}{6} - \frac{2}{6} = \frac{7-2}{6}$$
$$= \frac{5}{6}$$

D.4 SUBTRACTING FRACTIONS WITH COMMON DENOMINATORS

Ex 87:

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

Answer:

- $-$ $=$
- $\dfrac{3}{4} - \dfrac{2}{4} = \dfrac{3-2}{4}$
  $$= \dfrac{1}{4}$$
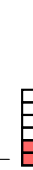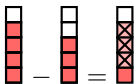
Ex 88:

$$\frac{4}{5} - \frac{3}{5} = \boxed{\frac{1}{5}}$$

Answer:

- $-$ $=$
- $\dfrac{4}{5} - \dfrac{3}{5} = \dfrac{4-3}{5}$
  $$= \dfrac{1}{5}$$

Ex 89:

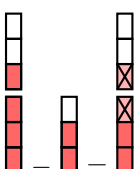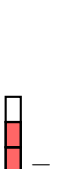$$\frac{3}{4} - \frac{1}{4} = \boxed{\frac{3}{4}}$$

Answer:

- $-$ $=$
- $\dfrac{3}{4} - \dfrac{1}{4} = \dfrac{3-1}{4}$
  $$= \dfrac{2}{4}$$

Ex 90:

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

Answer:

- $-$ $=$
- $\dfrac{4}{3} - \dfrac{2}{3} = \dfrac{4-2}{3}$
  $$= \dfrac{2}{3}$$

Ex 91:

$$\frac{7}{6} - \frac{2}{6} = \boxed{\frac{5}{6}}$$

Answer:

- $-$ $=$
- $\dfrac{7}{6} - \dfrac{2}{6} = \dfrac{7-2}{6}$
  $$= \dfrac{5}{6}$$