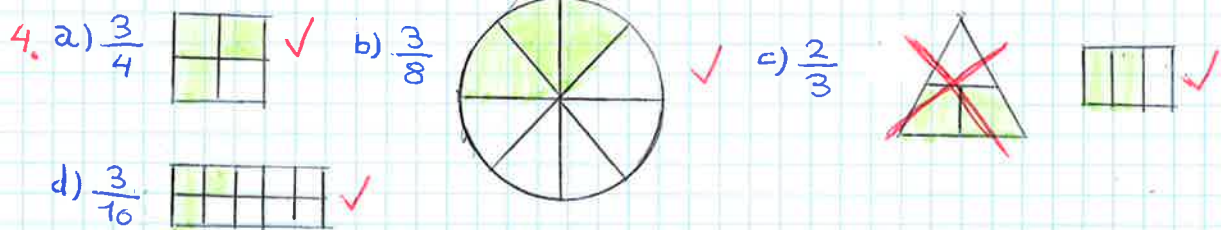
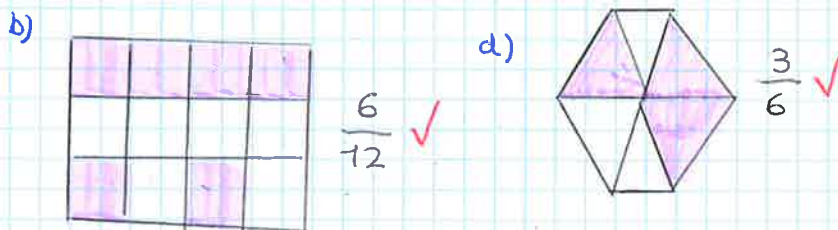
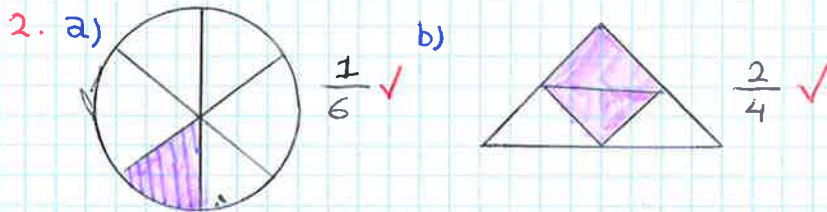


UNIDAD 4: FRACCIONES

1. a) Tres cuartos de hora. $\frac{3}{4}$ ✓
 b) Medio litro de agua. $\frac{1}{2}$ ✓
 c) Doce de los 25 alumnos de la clase. $\frac{12}{25}$ ✓
 d) Dos quintas partes del camino. $\frac{2}{5}$ ✓



5. a) $\frac{18}{3} = 6$ ✓ b) $\frac{20}{10} = 2$ ✓ c) $\frac{-45}{9} = -5$ ✓ d) $\frac{36}{4} = 9$ ✓

6. a) $\frac{1500}{5} = 300$ ✓ b) $\frac{162}{9} = 18$ ✓
 b) $\frac{-270}{-3} = 90$ ✓ d) $\frac{-144}{12} = -12$ ✓

11/12/22

7. a) $\frac{7}{8}$ de 200 = $\frac{200 \cdot 7}{8} = \frac{1400}{8} = 175$ ✓
 b) $\frac{-5}{12}$ de 3600 = $\frac{3600 \cdot (-5)}{12} = \frac{-18000}{12} = -1500$ ✓
 c) $\frac{3}{7}$ de -98 = $\frac{-98 \cdot 3}{7} = \frac{-294}{7} = -42$ ✓
 d) $\frac{17}{100}$ de 20 000 = $\frac{20000 \cdot 17}{100} = \frac{340000}{100} = 3400$ ✓

4. a) $\frac{3}{8}$ de 2000 = 750 ✓
↖ $750 = (2000 : 8)$

b) $\frac{5}{8}$ de 512 = 320 ✓
↖ $5 \cdot 512 : 8 = 320$

c) $\frac{-17}{4}$ de 320 = -1360 ✓
↖ $-1360 = (320 : 4)$

d) $\frac{2}{3}$ de 600 = 400 ✓
 $400 \cdot 3 : 2$
¡ IMPORTANTE !

10. DATOS ✓

En una clase de 1ºESO
Hay 12 chicos y
Hay 15 chicas.

OPERACIÓN

$$12 + 15 = 27$$

$\frac{15}{27}$ chicas
 $\frac{12}{27}$ chicos

SOLUCIÓN

La fracción es
 $\frac{15}{27}$ chicas hay y
 $\frac{12}{27}$ chicos.

11. DATOS ✓

Hay 1524 habitantes
 $\frac{5}{12}$ son menores de edad

OPERACIÓN

$$\frac{5}{12} \text{ de } 1524 = \frac{1524 \cdot 5}{12} = \frac{7620}{12} = 635$$
$$1524 - 635 = 889$$

SOLUCIÓN

Hay 889 personas mayores de edad.

12. DATOS

a) ¿Qué fracción le falta por leer?

$$14. a) \frac{5}{12} \text{ y } \frac{11}{24} = \begin{array}{l} 5 \cdot 24 = 120 \\ 12 \cdot 11 = 132 \end{array} \checkmark$$

No es equivalente

$$b) \frac{24}{36} = \frac{60}{90} = \begin{array}{l} 24 \cdot 90 = 2160 \\ 36 \cdot 60 = 2160 \end{array} \checkmark$$

Es equivalente

$$c) \frac{21}{48} \text{ y } \frac{15}{42} = \begin{array}{l} 21 \cdot 42 = 882 \\ 15 \cdot 48 = 720 \end{array} \checkmark$$

No es equivalente

$$16. a) \frac{36}{16} = \frac{9}{4} \checkmark \quad b) \frac{1}{10} = \frac{7}{70} \checkmark \quad c) \frac{8}{24} = \frac{5}{15} \checkmark$$

$$17. a) \frac{3}{4} = \frac{6}{8} = \frac{18}{24} \checkmark \quad c) \frac{1}{6} = \frac{2}{12} = \frac{6}{36} \checkmark$$

$$b) \frac{5}{8} = \frac{10}{16} = \frac{30}{48} \checkmark \quad d) \frac{12}{24} = \frac{24}{48} = \frac{72}{144} \checkmark$$

$$18. a) \frac{30}{40} = \frac{15}{20} = \frac{3}{4} \checkmark \quad c) \frac{12}{36} = \frac{6}{18} = \frac{2}{6} \checkmark$$

$$b) \frac{56}{84} = \frac{28}{42} = \frac{14}{21} \checkmark \quad d) \frac{42}{105} = \frac{14}{35} = \frac{2}{5} \checkmark$$

$$19. a) \frac{300}{400} = \frac{3}{4} \checkmark$$

$$b) \frac{198}{264} = \frac{99}{132} = \frac{47}{66} \checkmark$$

$$c) \frac{128}{256} = \frac{64}{128} = \frac{32}{64} = \frac{16}{32} = \frac{8}{16} = \frac{4}{8} = \frac{2}{4} = \frac{1}{2} \checkmark$$

$$d) \frac{320\,000}{360\,000} = \frac{32}{36} = \frac{8}{9} \checkmark$$

$$20. a) \frac{3}{4} = \frac{75}{100} \rightarrow \frac{3 \cdot 100 : 4}{300 : 4} \checkmark$$

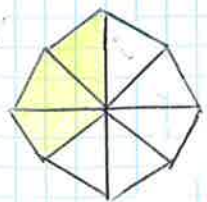
$$b) \frac{7}{20} = \frac{35}{100} \rightarrow \frac{100 \cdot 7 : 20}{700 : 20} \checkmark$$

$$c) \frac{12}{25} = \frac{48}{100} \rightarrow \frac{100 \cdot 12 : 25}{1200 : 25} \checkmark$$

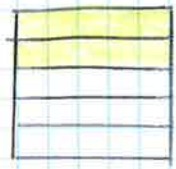
21. a) $\frac{24}{32}$



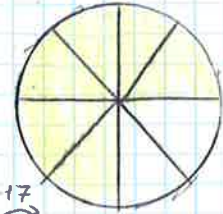
b) $\frac{15}{40} = \frac{3}{8}$



c) $\frac{6}{15} = \frac{2}{5}$



d) $\frac{75}{100} = \frac{3}{4}$



22. $\frac{56}{84} = \frac{28}{42} = \frac{14}{21} = \frac{2}{3}$ ✓

$\frac{28}{35} = \frac{4}{5}$ ✓

$\frac{32}{40} = \frac{16}{20} = \frac{4}{5}$ ✓

$\frac{34}{51} = \frac{2}{3}$ ✓

$\frac{102}{153} = \frac{34}{51} = \frac{2}{3}$ ✓

$\frac{92}{138} = \frac{46}{69} = \frac{2}{3}$ ✓

$\frac{1200}{1500} = \frac{12}{15} = \frac{4}{5}$ ✓

son equivalentes = $\frac{56}{84} = \frac{92}{138} = \frac{34}{51} = \frac{2}{3}$ ✓

son equivalentes = $\frac{28}{35} = \frac{32}{40} = \frac{1200}{1500}$ ✓

23. DATOS ✓

Regala $\frac{2}{5}$ de sus cromas
Total regala 12 cromas

SOLUCION ✓

Tiene 30 cromas

OPERACION ✓

$\frac{2}{5}$ de $\boxed{30} = 12$
 \downarrow
 $12 \cdot 5 : 2$
 $\frac{60 : 2}{30}$

24. a) $\frac{3}{50}, \frac{19}{50}$ y $\frac{7}{50} \triangleright \frac{3}{50} < \frac{7}{50} < \frac{19}{50}$ ✓

b) $\frac{7}{9}, \frac{4}{9}$ y $\frac{8}{9} \triangleright \frac{4}{9} < \frac{7}{9} < \frac{8}{9}$ ✓

c) $\frac{3}{5}, \frac{3}{7}$ y $\frac{3}{4} \triangleright \frac{3}{7} < \frac{3}{5} < \frac{3}{4}$ ✓

d) $\frac{23}{41}, \frac{23}{40}$ y $\frac{23}{39} \triangleright \frac{23}{41} < \frac{23}{40} < \frac{23}{39}$ ✓

26. a) $\frac{7}{9} > \frac{5}{6}$ ✓
 $\frac{42}{54} > \frac{45}{54}$ ✓
 $54 : 9 \cdot 7$ $54 : 6 \cdot 5$
 $\frac{6 \cdot 7}{42}$ $\frac{9 \cdot 5}{45}$

b) $\frac{3}{8} > \frac{5}{16}$ ✓
 $\frac{6}{16} > \frac{5}{16}$ ✓

c) $\frac{7}{10} > \frac{3}{35}$ ✓
 $\frac{245}{350} > \frac{30}{350}$ ✓

30. a) $\frac{2}{3} > \frac{5}{6}$ ✓ b) $\frac{3}{10} > \frac{3}{15}$ ✓ c) $\frac{1}{6} > \frac{5}{12} > \frac{7}{28}$ ✓

$\frac{4}{6} > \frac{5}{6}$ $\frac{9}{30} > \frac{6}{30}$ $\frac{14}{84} > \frac{35}{84} > \frac{21}{84}$

m.c.m

$6 \begin{array}{l} 2 \\ 3 \\ 1 \end{array} \quad 12 \begin{array}{l} 2 \\ 6 \\ 3 \\ 1 \end{array} \quad 28 \begin{array}{l} 2 \\ 14 \\ 7 \\ 1 \end{array}$
 $6 = 2 \cdot 3$ $12 = 2^2 \cdot 3$ $28 = 2^2 \cdot 7$
 $2^2 \cdot 3 \cdot 7 = 84$

9/12/22

34. a) $\frac{16}{15} + \frac{7}{30} = \frac{32}{30} + \frac{7}{30} = \frac{39}{30} = \frac{13}{10}$ ✓ b) $\frac{3}{12} - \frac{1}{3} = \frac{3}{12} - \frac{4}{12} = \frac{-1}{12}$ ✓

b) $\frac{7}{8} + \frac{7}{5} = \frac{35}{40} + \frac{56}{40} = \frac{91}{40}$ ✓ d) $\frac{4}{30} - \frac{9}{42} = \frac{28}{210} - \frac{35}{210} = \frac{-37}{210}$ ✓

35. a) $\frac{3}{2} + \frac{3}{4} + \frac{3}{8} = \frac{12}{8} + \frac{6}{8} + \frac{3}{8} = \frac{21}{8}$ ✓

b) $\frac{27}{4} + \frac{31}{10} + \frac{3}{8} = \frac{270}{40} + \frac{124}{40} + \frac{15}{40} = \frac{409}{40}$ ✓

36. a) $1 + \frac{3}{10} - \frac{1}{4} = \frac{20}{20} + \frac{6}{20} - \frac{5}{20} = \frac{21}{20}$ ✓

b) $3 - \frac{3}{5} + \frac{9}{4} = \frac{60}{20} - \frac{12}{20} + \frac{45}{20} = \frac{93}{20}$ ✓

c) $\frac{5}{6} - \frac{2}{4} - \frac{7}{4} + \frac{7}{20} = \frac{50}{60} - \frac{120}{60} - \frac{105}{60} + \frac{21}{60} = \frac{-154}{60} = \frac{-77}{30}$ ✓

37. a) $\frac{1}{2} + \frac{1}{5} = \frac{7}{10}$ ✓

$\frac{5}{10} + \frac{2}{10} = \frac{7}{10}$

b) $\frac{3}{8} + \frac{1}{4} = \frac{5}{8}$

$\frac{3}{8} + \frac{2}{8} = \frac{5}{8}$

c) $\frac{4}{7} - \frac{2}{5} = \frac{6}{35}$ ✓

$\frac{20}{35} - \frac{14}{35} = \frac{6}{35}$

d) $\frac{3}{6} - \frac{1}{3} = \frac{1}{6}$ ✓

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

44. 1) $\frac{1}{5} + \frac{1}{3} + \frac{2}{15} + \frac{2}{1}$
 $\frac{3}{15} + \frac{5}{15} + \frac{2}{15} + \frac{30}{15} = \frac{40}{15} = \frac{8}{3}$
 m.c.m (5, 3 y 15) = 15

2) $\frac{27}{15} + \frac{11}{30} + \frac{1}{5} + \frac{3}{1} = \checkmark$
 $\frac{54}{30} + \frac{11}{30} + \frac{6}{30} + \frac{90}{30} = \frac{161}{30}$

3) $\frac{4}{9} + \frac{5}{6} + \frac{1}{2} = \frac{32}{18} \checkmark$
 $\frac{8}{18} + \frac{15}{18} + \frac{9}{18} = \frac{32}{18} = \frac{16}{9}$

4) $\frac{5}{2} + \frac{4}{3} + \frac{8}{9} = \frac{86}{18} \checkmark$
 $\frac{45}{18} + \frac{24}{18} + \frac{16}{18} = \frac{85}{18}$

8) $\frac{7}{1} + \frac{11}{7} + \frac{13}{14} = \frac{5}{1}$
 $\frac{98}{14} + \frac{22}{14} + \frac{13}{14} = \frac{70}{14} = \frac{5}{1} \checkmark$

9) $\frac{2}{3} + \frac{3}{4} = \frac{17}{12} \checkmark$
 $\frac{8}{12} + \frac{9}{12} = \frac{17}{12}$

10) $\frac{7}{8} + \frac{3}{5} + \frac{3}{4} = \frac{89}{40} \checkmark$
 $\frac{35}{40} + \frac{24}{40} + \frac{30}{40} = \frac{89}{40}$

11) $\frac{7}{5} + \frac{2}{5} + \frac{1}{5} = \frac{10}{5} = 2$
 ~~$\frac{2}{1} = 2$~~ \checkmark
 = CUAL

15) $\frac{8}{1} + \frac{1}{2} + \frac{3}{1} + \frac{1}{4} + \frac{1}{8} = \frac{95}{8}$
 $\frac{64}{8} + \frac{4}{8} + \frac{24}{8} + \frac{2}{8} + \frac{1}{8} = \frac{95}{8} = 11 \frac{7}{8}$

16) $\frac{2}{7} + \frac{1}{2} + \frac{5}{14} =$
 $\frac{4}{14} + \frac{7}{14} + \frac{5}{14} = \frac{16}{14} = \frac{8}{7} \checkmark$

17) $\frac{1}{2} + \frac{1}{3} + \frac{1}{4} = \frac{13}{12}$
 $\frac{6}{12} + \frac{4}{12} + \frac{3}{12} = \frac{13}{12} \checkmark$

18) $\frac{3}{2} + \frac{7}{4} + \frac{1}{8} + \frac{5}{16} = \frac{59}{16}$
 $\frac{24}{16} + \frac{28}{16} + \frac{2}{16} + \frac{5}{16} = \frac{59}{16} \checkmark$

43. a) $\frac{5}{6} \cdot \frac{4}{9} = \frac{20}{54} = \frac{10}{27} \checkmark$

b) $\frac{3}{4} \cdot \frac{7}{1} = \frac{21}{4}$

c) $\frac{8}{27} \cdot \frac{81}{16} = \frac{648}{432} = \frac{324}{216} = \frac{162}{108}$

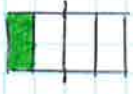
d) $8 \cdot \frac{5}{16} = \frac{40}{16} = \frac{10}{4} = \frac{5}{2} \checkmark$
 e) $\frac{3}{4} \cdot \frac{5}{6} \cdot \frac{1}{8} = \frac{15}{192} = \frac{5}{64} \checkmark$

X
 $\frac{3}{2}$


f) $\frac{1}{2} \cdot \frac{2}{3} \cdot \frac{3}{4} \cdot \frac{4}{5} = \frac{24}{120} = \frac{12}{60} = \frac{2}{10}$

44. a) Dos tercios de 600m $\frac{2}{3}$ de 600 = $\frac{600 \cdot 2}{3} = \frac{200 \cdot 2}{1} = 400 \checkmark$

b) La mitad de medio kilogramo

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

c) La mitad de la mitad de la mitad.

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

d) Las tres décimas partes de dos tercios

$\frac{3}{10}$ de $\frac{2}{3} = \frac{6}{30} = \frac{1}{5} \checkmark$

45. a) $\frac{3}{8} = \frac{8}{3} \checkmark$

b) $\frac{6}{5} = \frac{5}{6} \checkmark$

c) $\frac{1}{9} = 9 \checkmark$

d) $\frac{12}{4} = \frac{1}{12} \checkmark$

46. a) $\frac{8}{9} : \frac{4}{9} = \frac{72}{36} = \frac{8}{4} = 2 \checkmark$

d) $\frac{5}{12} : \frac{10}{4} = \frac{5}{120} = \frac{1}{24} \checkmark$

b) $\frac{9}{7} : \frac{5}{2} = \frac{18}{35} \checkmark$

e) $\frac{21}{5} : \frac{7}{10} = \frac{210}{35} = \frac{42}{7} = 6 \checkmark$

c) $\frac{8}{4} : \frac{4}{5} = \frac{40}{4} = 10 \checkmark$

f) $\frac{1}{4} : \frac{1}{12} = \frac{12}{4} = 3 \checkmark$

20/2/22

47. a) $\left(\frac{3}{5}\right)^2 = \frac{3}{5} \cdot \frac{3}{5} = \frac{9}{25} \checkmark$

b) $\left(\frac{1}{2}\right)^6 = \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} = \frac{1}{64} \checkmark$

c) $\left(\frac{3}{10}\right)^4 = \frac{3}{10} \cdot \frac{3}{10} \cdot \frac{3}{10} \cdot \frac{3}{10} = \frac{81}{10000} \checkmark$

48. a) $\frac{3}{4} \cdot \frac{4}{3} = 1 \checkmark$ c) $\frac{2}{3} : \frac{2}{5} = \frac{2}{3} \cdot \frac{5}{2} = \frac{10}{6} = \frac{5}{3} \checkmark$

b) $\frac{5}{8} = 1 : \frac{8}{5} \checkmark$ d) $\frac{4}{8} : \frac{9}{2} = \frac{8}{27} \checkmark$

OPERACIONES COMBINADAS

$$53. \text{ a) } \frac{5}{6} + \frac{1}{3} \cdot \frac{2}{5} = \checkmark$$

$$\frac{5}{6} + \frac{2}{15}$$

$$\frac{25}{30} + \frac{4}{30} = \frac{29}{30}$$

$$\text{ b) } \frac{5}{6} \cdot \frac{1}{3} + \frac{2}{5} = \checkmark$$

$$\frac{5}{18} + \frac{2}{5}$$

$$\frac{25}{90} + \frac{36}{90} = \frac{61}{90}$$

$$\text{ c) } \frac{7}{4} - \frac{3}{10} \cdot \frac{5}{6} = \checkmark$$

$$\frac{7}{4} - \frac{15}{60}$$

$$\frac{7}{4} - \frac{1}{4} = \frac{6}{4} = \frac{3}{2}$$

$$\text{ d) } \frac{13}{2} - \frac{1}{2} \cdot \frac{11}{4} = \checkmark$$

$$\frac{13}{2} - \frac{11}{8}$$

$$\frac{52}{8} - \frac{11}{8} = \frac{41}{8}$$

$$\text{ e) } \frac{5}{6} + \frac{1}{3} : \frac{2}{5} = \checkmark$$

$$\frac{5}{6} + \frac{5}{6} = \frac{10}{6} = \frac{5}{3}$$

$$\text{ f) } \frac{5}{6} : \frac{1}{3} + \frac{2}{5} = \checkmark$$

$$\frac{15}{6} + \frac{2}{5}$$

$$\frac{15}{30} + \frac{12}{30} = \frac{27}{30} = \frac{9}{10}$$

$$\text{ g) } \frac{7}{4} - \frac{3}{10} : \frac{5}{6} = \times$$

$$\frac{7}{4} - \frac{18}{50}$$

$$\frac{7}{4} - \frac{3}{10}$$

$$\frac{70}{40} - \frac{12}{40} = \frac{58}{40} = \frac{29}{20}$$

$$\text{ h) } \frac{13}{2} - \frac{1}{2} : \frac{11}{4} = \checkmark$$

$$\frac{13}{2} - \frac{4}{22}$$

$$\frac{263}{22} - \frac{44}{22} = \frac{219}{22}$$

$$55. \text{ a) } \frac{5}{6} - \frac{3}{4} \cdot \frac{2}{5} + \frac{3}{2} = \checkmark$$

$$\frac{5}{6} - \frac{6}{20} + \frac{3}{2}$$

$$\frac{100}{120} - \frac{36}{120} + \frac{36}{120}$$

$$\frac{64}{120} + \frac{3}{2}$$

$$\frac{64}{120} + \frac{180}{120} = \frac{244}{120} = \frac{122}{60} = \frac{61}{30} = \checkmark$$

$$\text{ b) } \frac{5}{6} - \frac{3}{4} : \frac{2}{5} + \frac{3}{2} = \checkmark$$

$$\frac{5}{6} - \frac{15}{8} + \frac{3}{2}$$

$$\frac{40}{48} - \frac{90}{48} + \frac{72}{48}$$

$$-\frac{50}{48} + \frac{72}{48}$$

$$\frac{22}{48} = \frac{11}{24} = \checkmark$$

$$\text{ c) } \frac{1}{2} : \frac{3}{4} \cdot \frac{3}{5} + \frac{3}{2} = \checkmark$$

$$\frac{4}{6} \cdot \frac{3}{5} + \frac{3}{2}$$

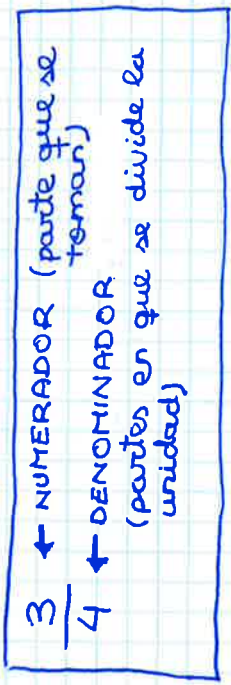
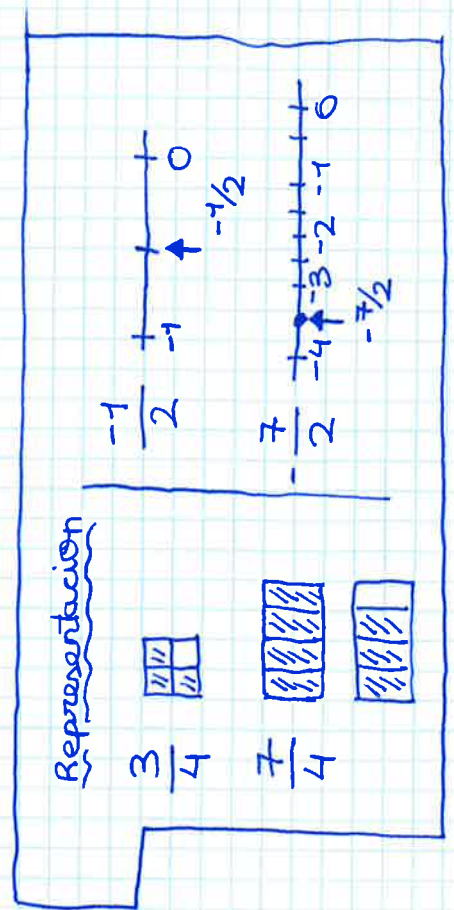
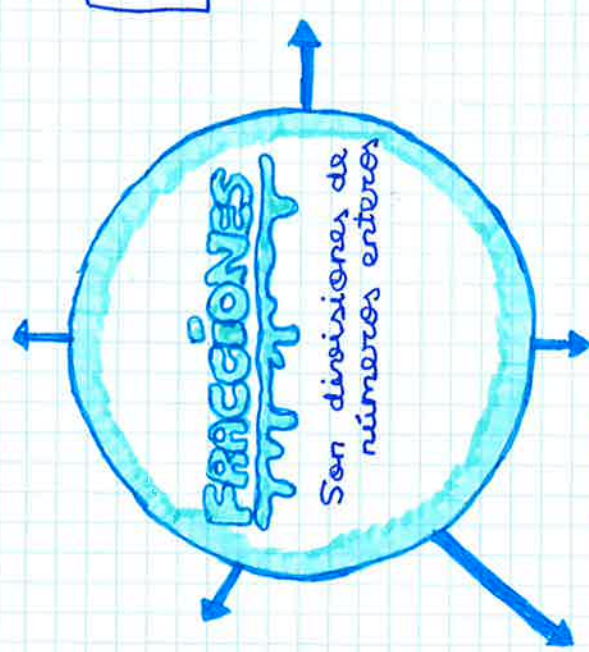
$$\frac{12}{30} + \frac{3}{2}$$

$$\frac{12}{30} + \frac{45}{30} = \frac{57}{30} = \frac{19}{10} = \checkmark$$

Las fracciones como operador

$$\frac{3}{12} \text{ de } 144 = \frac{3 \cdot 144}{12} = 36$$

$\frac{3}{12}$ de 144 = 36
 \swarrow
 $36 \cdot 12 : 3$



Operaciones

SUMA / RESTA
 $\frac{3}{4} + \frac{2}{10} = \frac{15}{20} + \frac{4}{20} = \frac{19}{20}$

MULTIPLICACION
 $\frac{3}{4} \cdot \frac{5}{7} = \frac{3 \cdot 5}{4 \cdot 7} = \frac{15}{28}$

INVERSA
 $\frac{7}{6} \rightarrow \frac{6}{7}$ porque $\frac{7}{6} \cdot \frac{6}{7} = 1$

DIVISION
 $\frac{3}{4} : \frac{5}{7} = \frac{3}{4} \cdot \frac{7}{5} = \frac{21}{20}$

Operaciones combinadas

$$\frac{2}{3} - \left(\frac{1}{2} - \frac{2}{3} \right) \cdot \left(\frac{3}{2} \right)^2 =$$

$$= \frac{2}{3} - \left(\frac{3}{6} - \frac{4}{6} \right) \cdot \frac{9}{4} =$$

$$= \frac{2}{3} - \left(-\frac{1}{6} \right) \cdot \frac{9}{4} =$$

$$\frac{2}{3} - \frac{-9}{24} =$$

$$\frac{25}{24}$$

$$d) \frac{1}{2} \cdot \frac{3}{4} : \frac{3}{5} + \frac{3}{2} \checkmark$$

$$\frac{3}{8} : \frac{3}{5} + \frac{3}{2}$$

$$\frac{15}{24} + \frac{3}{2}$$

$$\frac{15}{24} + \frac{36}{24} = \frac{51}{24} = \frac{17}{8}$$

$$e) 6 - \frac{3}{8} : \frac{5}{4} - \frac{1}{20} \checkmark$$

$$\frac{6}{1} - \frac{12}{40} - \frac{1}{20}$$

$$\frac{240}{40} - \frac{12}{40} - \frac{2}{40} = \frac{226}{40} = \frac{113}{20}$$

$$f) \frac{3}{4} : \frac{2}{5} - \frac{1}{3} \cdot \frac{4}{9} \checkmark$$

$$\frac{15}{8} - \frac{4}{27}$$

$$\frac{405}{216} - \frac{32}{216}$$

$$\frac{373}{216}$$

$$g) 2 : \frac{8}{5} - \frac{16}{3} : 4 \checkmark$$

$$\frac{10}{8} - \frac{16}{12}$$

$$\frac{30}{24} - \frac{32}{24} = \frac{-2}{24} = \frac{-1}{12}$$

$$h) \frac{1}{2} : 10 - 10 : \frac{1}{2} \checkmark$$

$$\frac{1}{20} - \frac{20}{1}$$

$$\frac{1}{20} - \frac{400}{20} = \frac{-399}{20}$$

$$56. a) \frac{3}{4} - \frac{1}{4} \cdot \left(\frac{3}{5} - \frac{1}{10} \right) \checkmark$$

$$\frac{3}{4} - \frac{1}{4} \cdot \left(\frac{6}{10} - \frac{1}{10} \right)$$

$$\frac{3}{4} - \frac{1}{4} \cdot \frac{5}{10}$$

$$\frac{3}{4} - \frac{5}{40}$$

$$\frac{30}{40} - \frac{5}{40} = \frac{25}{40} = \frac{5}{8}$$

$$b) 5 \frac{1}{4} + \frac{7}{3} : \left(\frac{4}{3} + \frac{2}{3} \right) \checkmark$$

$$5 \frac{1}{4} + \frac{7}{3} : \left(\frac{4}{3} + \frac{2}{3} \right)$$

$$5 \frac{1}{4} + \frac{7}{3} : \frac{10}{3}$$

$$5 \frac{1}{4} + \frac{21}{30}$$

$$\frac{50}{30} + \frac{21}{30} = \frac{71}{30} = \frac{57}{10}$$

$$c) \frac{3}{8} - \frac{1}{4} : \left(\frac{2}{3} \cdot \frac{3}{4} \right) \checkmark$$

$$\frac{3}{8} - \frac{1}{4} : \frac{6}{12}$$

$$\frac{3}{8} - \frac{12}{24}$$

$$\frac{9}{24} - \frac{12}{24} = \frac{-3}{24} = \frac{-1}{8}$$

$$d) \frac{8}{3} - \left(\frac{1}{3} + \frac{1}{2} \right) : \frac{5}{4} \checkmark$$

$$\frac{8}{3} - \left(\frac{2}{6} + \frac{3}{6} \right) : \frac{5}{4}$$

$$\frac{8}{3} - \frac{5}{6} : \frac{5}{4}$$

$$\frac{8}{3} - \frac{20}{30}$$

$$\frac{80}{30} - \frac{20}{30} = \frac{60}{30} = \frac{20}{10} = \frac{4}{5} = 2$$

$$e) \left(\frac{8}{3} - \frac{1}{3} + \frac{1}{2} \right) : \frac{5}{4} \checkmark$$

$$\left(\frac{16}{6} - \frac{2}{6} + \frac{3}{6} \right) : \frac{5}{4}$$

$$\frac{17}{6} : \frac{5}{4} = \frac{68}{30} = \frac{34}{15}$$

$$f) \frac{8}{3} - \left(\frac{1}{3} + \frac{1}{2} : \frac{5}{4} \right)$$

$$\frac{8}{3} - \left(\frac{1}{3} + \frac{4}{10} \right)$$

$$\frac{8}{3} - \left(\frac{10}{30} + \frac{12}{30} \right)$$

$$\frac{80}{30} - \frac{22}{30} = \frac{58}{30} = \frac{29}{15}$$

$$58. a) \left(\frac{2}{3}\right)^2 - \left(\frac{1}{2}\right)^2 \checkmark$$

$$\frac{4}{9} - \frac{1}{4}$$

$$\frac{16}{36} - \frac{9}{36} = \frac{7}{36}$$

$$b) \left(\frac{3}{4} - \frac{5}{4} : 2\right)^2$$

$$\left(\frac{3}{4} - \frac{5}{8}\right)^2$$

$$\left(\frac{6}{8} - \frac{5}{8}\right)^2$$

$$\left(\frac{1}{8}\right)^2 = \frac{1}{64}$$

$$c) \left(\frac{2}{3}\right)^2 + \left(\frac{2}{3}\right)^2$$

$$\frac{4}{9} + \frac{4}{9} = \frac{8}{9}$$

$$d) \left(3 - \frac{7}{2}\right)^3 + 2^3$$

$$\left(\frac{6}{2} - \frac{7}{2}\right)^3 + 2^3$$

$$\left(\frac{-1}{2}\right)^3 + 8$$

$$-\frac{1}{8} + 8$$

$$-\frac{1}{8} + \frac{64}{8} = \frac{63}{8}$$

$$59. a) \left(\frac{3}{4} \cdot \frac{2}{3}\right)^3 : \frac{5}{8}$$

$$\left(\frac{6}{12}\right)^3 : \frac{5}{8}$$

$$\frac{216}{1728} : \frac{5}{8} = \frac{1728}{8640} = \frac{1}{5}$$

$$b) \left(1 - \frac{1}{3}\right)^3 - \left(1 + \frac{1}{3}\right)^3$$

$$\left(\frac{3}{3} - \frac{1}{3}\right)^3 - \left(\frac{3}{3} + \frac{1}{3}\right)^3$$

$$\left(\frac{2}{3}\right)^3 - \left(\frac{4}{3}\right)^3$$

$$\frac{8}{27} - \frac{64}{27} = \frac{56}{27}$$

$$c) \left(1 - \frac{1}{2}\right) \cdot \left(1 - \frac{1}{3}\right)^2 = \frac{2}{32}$$

$$\left(\frac{2}{2} - \frac{1}{2}\right) \cdot \left(\frac{3}{3} - \frac{1}{3}\right)^2 = \frac{2}{9}$$

$$\frac{1}{2} \cdot \left(\frac{2}{3}\right)^2 = \frac{2}{9}$$

$$\frac{1}{2} \cdot \frac{4}{9} = \frac{2}{9}$$

$$\frac{4}{18} - \frac{2}{9}$$

$$\frac{4}{18} - \frac{4}{18} = \frac{0}{18} = 0$$

$$d) \left(\frac{1}{2}\right)^4 - \left(3 - \frac{7}{3}\right)^3$$

$$\frac{1}{16} - \left(\frac{9}{3} - \frac{7}{3}\right)^3$$

$$\frac{1}{16} - \left(\frac{2}{3}\right)^3$$

$$\frac{1}{16} - \frac{8}{27}$$

$$\frac{27}{432} - \frac{128}{432} = \frac{-101}{432}$$

63 Un pueblo tiene 3600 habitantes. Las dos terceras partes de sus habitantes son españoles, $\frac{1}{9}$ son de otros países europeos, $\frac{1}{9}$ son de origen africano y el resto son americanos.

a) ¿Qué fracción del total representan los habitantes americanos?

$$\frac{2}{3} + \frac{1}{9} + \frac{1}{9}$$

$$\frac{6}{9} + \frac{1}{9} + \frac{1}{9} = \frac{8}{9}$$

$$\frac{9}{9} - \frac{8}{9} = \frac{1}{9}$$

Los americanos son $\frac{1}{9}$ de 3600 habitantes.

b) ¿Cuántos habitantes hay de cada continente?

$$\frac{1}{9} \text{ de } 3600 = \frac{3600 \cdot 1}{9} = 400$$

$$\frac{2}{3} \text{ de } 3600 = \frac{3600 \cdot 2}{3} = \frac{7200}{3} = 2400$$

Hay 2400 habitantes son españoles
 Hay 400 habitantes son africanos
 Hay 400 habitantes americanos
 Hay 400 habitantes de otros países

17/01/2022
 64. Lucía pasa 8 horas diarias durmiendo, 2 horas comiendo y 6 horas en el colegio. ¿Qué fracción del día dedica a cada tarea? ¿Qué fracción le queda?

$$2+6+8=16$$

$$\frac{24}{24} - \frac{16}{24} = \frac{8}{24}$$

$\frac{2}{24}$ lo dedica a comer
 $\frac{6}{24}$ lo dedica en el colegio
 $\frac{8}{24}$ lo dedica a dormir

y le queda $\frac{8}{24}$ horas libres.

65. a) ¿Cuál de los dos ha trabajado más?

$$\frac{3}{16} < \frac{5}{24}$$

$$\frac{9}{48} < \frac{10}{48}$$

Ha trabajado más David

b) Si el trabajo ha durado 96h ¿Cuántas horas ha trabajado cada uno?

$$\frac{9}{48} \text{ de } 96 = \frac{9 \cdot 96}{48} = 18 \text{ ha trabajado Ana}$$

$$\frac{10}{48} \text{ de } 96 = \frac{10 \cdot 96}{48} = 20 \text{ ha trabajado David}$$

c) Si el sueldo por el trabajo completo son 1440€ ¿cuánto debe cobrar cada uno?

$$1440 : 96 = 15 \text{ € / h}$$

$$15 \cdot 18 = 270 \text{ €}$$

$$15 \cdot 20 = 300 \text{ €}$$

66. a) ¿Qué fracción del billete inicial representa la parte que tiene cada hermano?

$$\frac{1}{10} \text{ de } 200 = 20$$

$$\frac{1}{10} \text{ de } \frac{1}{5} = \frac{1}{50} \text{ cada hermano del billete original}$$

$$\frac{1}{50} \text{ de } 300 = 60 \text{ € cada hermano}$$

67. a) ¿Ha repartido toda la herencia?

$$\frac{1}{2} + \frac{1}{3} + \frac{1}{9}$$

$$\frac{9}{18} + \frac{6}{18} + \frac{2}{18} = \frac{17}{18}$$

$$\frac{18}{18} - \frac{17}{18} = \frac{1}{18} \text{ No reparte toda su herencia}$$

b) Si el pequeño se lleva 1800€ ¿cuánto se llevaron los otros hermanos?

$$\frac{2}{18} = 1800$$

$$1800 : 2 = 900 = \frac{1}{18}$$

$$\frac{9}{18} = 8100$$

$$\frac{6}{18} = 5400$$

El hermano mayor 8100€
 El hermano mediano 5400€
 El hermano pequeño 1800€

Para asegurar =>

$$\frac{18}{18} = 16200$$

$$\frac{(16200 - 1800) - 5400 - 8100}{14400 - 5400} = 9000 - 8100 = 900$$

Entonces sobra y nada la herencia entera

68. un vendedor de refrescos quiere utilizar botellas de dos tamaños: $\frac{1}{3}$ de litro y $\frac{1}{5}$ de litro -

a) ¿Cuántas botellas de $\frac{1}{3}$ de litro necesita para envasar 40L? ¿Y cuántas de $\frac{1}{5}$ de litro? B

$$10 = 3 \text{ botellas}$$

$$40 : 3 = 120 \text{ botellas}$$

$$40 \cdot 5 = 200 \text{ botellas}$$

Utilizara 120 botellas de $\frac{1}{3}$
Utilizara 200 botellas de $\frac{1}{5}$

b) Si quiere envasar cada mitad de los 40L en un tipo de botellas, ¿cuántas botellas de cada tipo usara? B

$$40 : 2 = 20$$

$$20 \cdot 3 = 60 \text{ botellas}$$

$$20 \cdot 5 = 100 \text{ botellas}$$

Utilizara 60 botellas de $\frac{1}{3}$
Utilizara 100 botellas de $\frac{1}{5}$

c) ¿Es posible envasar los 40L de forma que haya el mismo número de botellas de cada tipo?

$$\frac{1}{3} + \frac{1}{5} = \frac{8}{15}$$

$$40 : \frac{8}{15} = 75 \text{ botellas de cada tipo}$$

19/01/23

69. a) ¿Cuántos Kilómetros habra recorrido al terminar? B

DATOS
1er día $\frac{3}{10}$
2er día $\frac{1}{4}$
3er día $\frac{1}{5}$

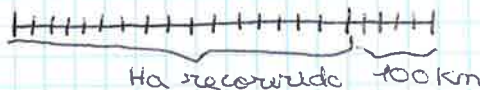
Le faltan 100 Km

OPERACION

$$\frac{3}{10} + \frac{1}{4} + \frac{1}{5}$$

$$\frac{6}{20} + \frac{5}{20} + \frac{4}{20} = \frac{15}{20}$$

$20 \cdot 20 = 400$ Km habra recorrido al terminar



70. ¿Cuántas paginas tiene el libro? B

$$\frac{2}{7} + \frac{5}{14}$$

$$\frac{1}{2} \text{ de } \frac{5}{7} = \frac{5}{14} \text{ del segundo día}$$

$$\frac{3}{5} \text{ de } \frac{5}{14} = \frac{15}{70} \text{ del tercer día}$$

$$\frac{2}{7} + \frac{5}{14} + \frac{15}{70}$$

$$\frac{20}{70} + \frac{25}{70} + \frac{15}{70} = \frac{60}{70} = \frac{6}{7}$$

$70 \cdot 7 = 490$ paginas que tiene el libro.

108. La parte de un iceberg que queda por debajo del agua y no es visible es $\frac{9}{10}$ de su volumen total. B

$$220 \cdot 10 = 2200 \text{ Km}^3 \text{ es el volumen total}$$

$$5000 - 375 = 4625$$

$\frac{4625}{5000}$ le queda por devolver.

710. ¿Se ha aplicado el descuento correctamente? B

$$\frac{1}{10} \text{ de } 900 = 90 \text{ € de descuento}$$

Debería haber pagado $900 - 90 = 810 \text{ €}$