

LØSNINGSFORSLAG FOR BRØKHEFTER

FORSKER-
FABRIKKEN

Vi utforsker brøk

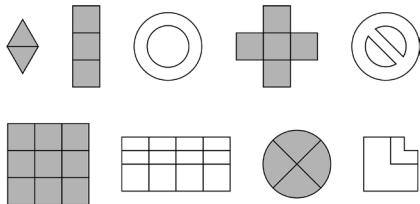
1

- b) $\frac{1}{2}$ c) $\frac{1}{6}$ d) $\frac{4}{8}$

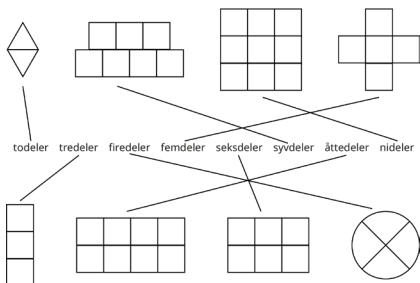
2

- a) $\frac{3}{8}$ b) $\frac{3}{4}$ c) $\frac{1}{4}$
 d) $\frac{4}{6}$ e) $\frac{3}{7}$ f) $\frac{5}{10}$
 g) $\frac{1}{8}$ h) $\frac{2}{4}$

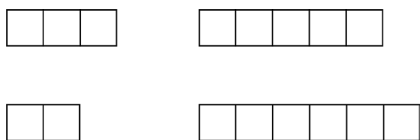
3



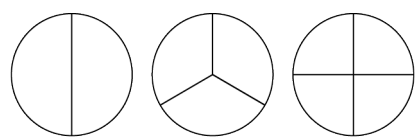
4



5



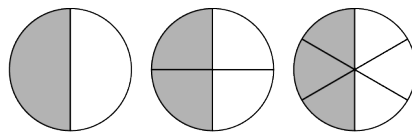
6



7

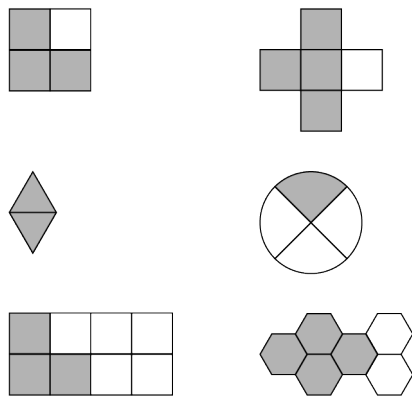
Den første figuren viser $\frac{1}{4}$. De andre har enten deler som ikke er like store eller ikke fire deler.

8



Brøkene er like store selv om de har ulike tellere og nevnerne.

9



10

- a) $\frac{2}{3}$ av figurene er sirkler.
 b) $\frac{2}{4}$ av figurene er hvite.
 $\frac{1}{4}$ av figurene er trekantet.
 c) $\frac{4}{8}$ av figurene er hvite.
 $\frac{2}{8}$ av figurene er trekantet.
 $\frac{3}{8}$ av figurene er firkantet.
 $\frac{3}{8}$ av figurene er sirkler.

11

$\frac{4}{8}$ av figurene er ispinner.

$\frac{3}{8}$ av figurene er epler.

$\frac{1}{8}$ av figurene er kakestykker.

12

$\frac{3}{5}$ av figurene er grå.

$\frac{3}{5}$ av figurene er ispinner.

13

a) De har spilt seks kamper.

b) De har vunnet $\frac{4}{6}$ kamper.

c) De har tapt $\frac{2}{6}$ kamper.

14

a) Det er seks hester til sammen.

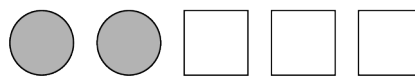
b) $\frac{2}{6}$ av hestene er hvite.

c) $\frac{3}{6}$ av hestene er ikke svarte.

15

Indira har bodd $\frac{4}{9}$ av livet sitt i Bergen.

16

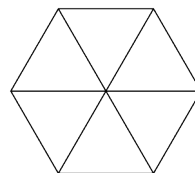


17

Det fargede området er $\frac{1}{8}$. Det er tegnet inn $\frac{1}{4}$ som igjen er delt i to.

Halvparten av $\frac{1}{4} = \frac{1}{8}$.

18



19

$\frac{1}{6}$

$\frac{5}{6}$

$\frac{3}{6}$

Vi blir enda bedre kjent med brøk

20

a) $\frac{1}{4}$ $\frac{3}{4}$

$\frac{3}{4}$ har den største telleren.

$\frac{3}{4}$ er størst.

b) $\frac{3}{6}$ $\frac{5}{6}$

$\frac{5}{6}$ har den største telleren.

$\frac{5}{6}$ er størst.

c) $\frac{1}{3}$ $\frac{2}{3}$

$\frac{2}{3}$ har den største telleren.

$\frac{2}{3}$ er størst.

d) $\frac{1}{5}$ $\frac{3}{5}$

$\frac{3}{5}$ har den største telleren.

$\frac{3}{5}$ er størst.

21

- a) $\frac{6}{12}$ b) $\frac{5}{7}$
 c) $\frac{8}{9}$ d) $\frac{28}{100}$

22

- a) $\frac{1}{4}$ $\frac{2}{4}$ $\frac{3}{4}$
 b) $\frac{2}{10}$ $\frac{3}{10}$ $\frac{5}{10}$ $\frac{7}{10}$
 c) $\frac{1}{17}$ $\frac{4}{17}$ $\frac{5}{17}$ $\frac{16}{17}$

23

- a) $\frac{4}{8}$, $\frac{5}{8}$ eller $\frac{6}{8}$.
 b) $\frac{5}{10}$
 c) $\frac{58}{130}$, $\frac{59}{130}$ og så videre opp til $\frac{119}{130}$.

24

$\frac{1}{2}$ er størst. $\frac{1}{2}$ er halvparten av noe. $\frac{1}{100}$ er en hundredel.

25

- a) $\frac{1}{5}$ b) $\frac{4}{7}$
 c) $\frac{2}{100}$ d) $\frac{3}{30}$
 e) $\frac{17}{23}$ f) $\frac{6}{29}$
 g) $\frac{8}{25}$ h) $\frac{10}{50}$

26

- a) $\frac{1}{5}$ $\frac{1}{4}$ $\frac{1}{2}$
 b) $\frac{1}{8}$ $\frac{1}{7}$ $\frac{1}{5}$
 c) $\frac{2}{5}$ $\frac{2}{4}$ $\frac{2}{3}$
 d) $\frac{3}{20}$ $\frac{3}{10}$ $\frac{3}{5}$
 e) $\frac{5}{7}$ $\frac{5}{7}$ $\frac{5}{5}$

27

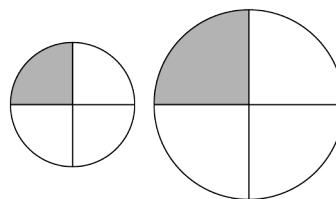


28

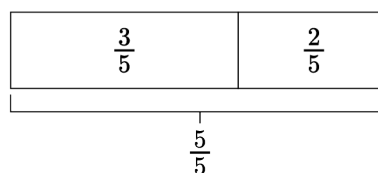
- a) $\frac{1}{3}$ og $\frac{2}{3}$ er en hel.
 b) $\frac{1}{2}$ og $\frac{1}{2}$ er en hel.
 c) $\frac{1}{4}$ og $\frac{3}{4}$ er en hel.

29

$\frac{1}{4}$ av en pizza kan være større enn $\frac{1}{4}$ av en annen pizza dersom den ene pizzaen er større enn den andre.



30



Filip har spist $\frac{3}{5}$. Indira har spist $\frac{2}{5}$. Filip har spist mest.

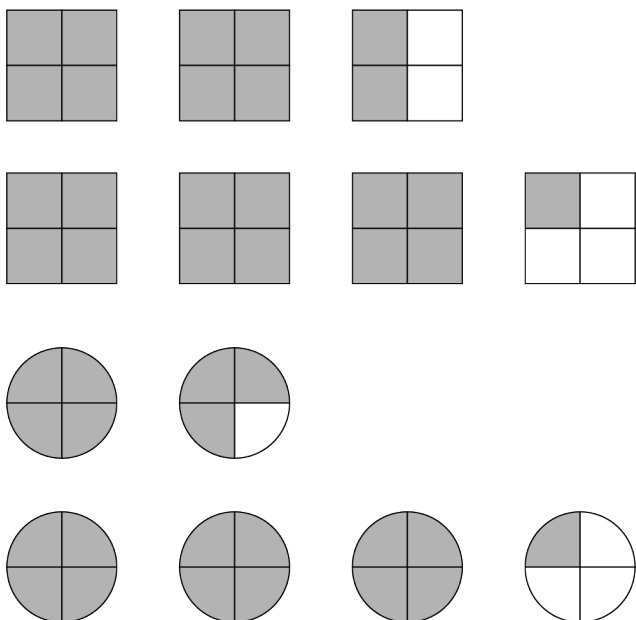
31

- a) Det er 3 hele vinduer fargelagt.
 b) Det er 2 hele vinduer fargelagt.
 c) Det er 1 hele vinduer fargelagt.

32

- a) $3\frac{1}{4}$
- b) $2\frac{3}{4}$
- c) $1\frac{2}{4}$

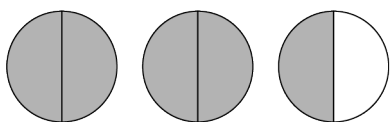
33



34

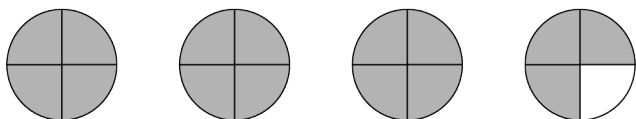
- a) $\frac{6}{4}$
- b) $\frac{9}{4}$
- c) $\frac{13}{4}$

35

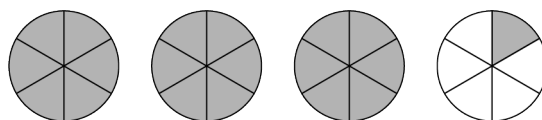


$2\frac{1}{2}$ kan også skrives som uekte brøk $\frac{5}{2}$.

36



37



38

- a) Blandet brøk: $1\frac{1}{2}$
Uekte brøk: $\frac{3}{2}$
- b) Blandet brøk: $1\frac{2}{3}$
Uekte brøk: $\frac{5}{3}$
- c) Blandet brøk: $1\frac{5}{6}$
Uekte brøk: $\frac{11}{6}$
- d) Blandet brøk: $1\frac{3}{4}$
Uekte brøk: $\frac{7}{4}$
- e) Blandet brøk: $1\frac{4}{5}$
Uekte brøk: $\frac{9}{5}$
- f) Blandet brøk: $1\frac{7}{8}$
Uekte brøk: $\frac{15}{8}$

39

- a) 2
- b) 4
- c) 3
- d) 7
- e) 10
- f) 15

40

- a) 3
- b) 9
- c) 4
- d) 8
- e) 4
- f) 12
- g) 5
- h) 10

41

- a) 3
- b) 4
- c) 3
- d) 5
- e) 2
- f) 1

42

b) 2 hele kaker og 1 halv kake = $2\frac{1}{2}$

c) 3 hele kaker og 1 tredjedel kake = $3\frac{1}{3}$

d) 2 hele kaker og 1 fjerdedel kake = $2\frac{1}{4}$

e) 3 hele kaker og 2 fjerdedeler = $3\frac{2}{4}$

f) 3 hele kaker og 3 fjerdedeler = $3\frac{3}{4}$

Vi regner med brøk

1

a) $\frac{6}{8} = \frac{3}{4}$

b) $\frac{6}{10} = \frac{3}{5}$

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

d) $\frac{4}{12} = \frac{1}{3}$

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

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

2

$\frac{1}{2} \quad \frac{2}{4} \quad \frac{3}{6} \quad \frac{6}{12}$

3

a) $\frac{4}{8} = \frac{1}{2}$

b) $\frac{2}{8} = \frac{1}{4}$

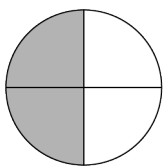
c) $\frac{6}{9} = \frac{2}{3}$

4

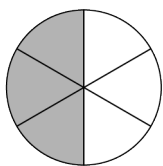
$\frac{1}{3} \quad \frac{2}{6} \quad \frac{4}{12} \quad \frac{8}{24}$

5

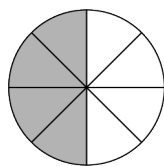
a)



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

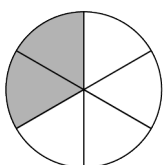


$\frac{1}{2} = \frac{3}{6}$

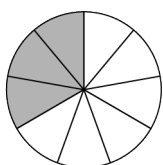


$\frac{1}{2} = \frac{4}{8}$

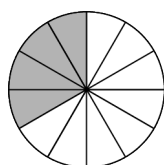
b)



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



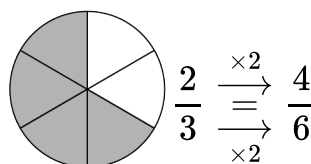
$\frac{1}{3} = \frac{3}{9}$



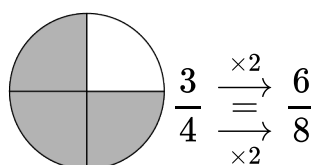
$\frac{1}{3} = \frac{4}{12}$

6

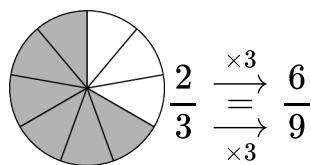
a)



b)



c)



7

a) $\frac{1}{3} \xrightarrow[\times 2]{=} \frac{2}{6}$

b) $\frac{1}{2} \xrightarrow[\times 5]{=} \frac{5}{10}$

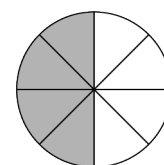
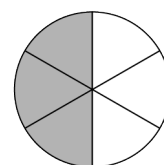
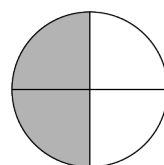
c) $\frac{2}{5} \xrightarrow[\times 2]{=} \frac{4}{10}$

d) $\frac{3}{4} \xrightarrow[\times 2]{=} \frac{6}{8}$

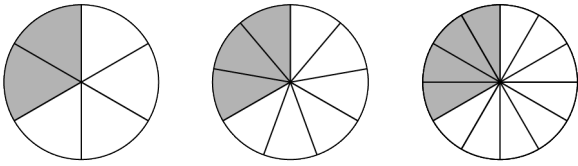
e) $\frac{1}{4} \xrightarrow[\times 3]{=} \frac{3}{12}$

f) $\frac{1}{6} \xrightarrow[\times 2]{=} \frac{2}{12}$

8



$\frac{1}{2} = \frac{2}{4} = \frac{3}{6} = \frac{4}{8}$



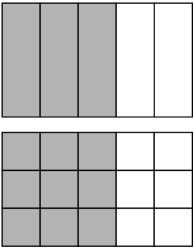
$$\frac{1}{3} = \frac{2}{6} = \frac{3}{9} = \frac{4}{12}$$

9

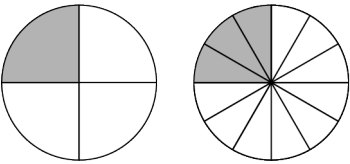
a) $\frac{1}{2} = \frac{2}{4} = \frac{3}{6} = \frac{4}{8} = \frac{5}{10} = \frac{6}{12}$

b) $\frac{3}{6} = \frac{6}{12} = \frac{12}{24} = \frac{24}{48}$

10



11



12

$\frac{2}{3}$ er $\frac{12}{18}$

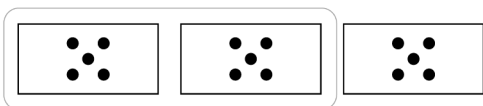
13

a) $\frac{4}{5}$ av 15

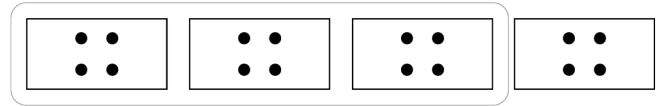
b) $\frac{2}{4}$ av 12

14

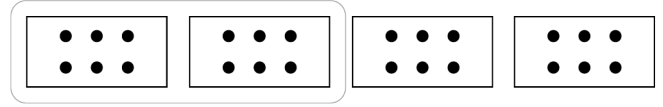
b)



c)



d)



15

b)

$8 : 4 = 2$ $2 \times 2 = 4$ $\frac{2}{4}$ av 8 = 4

c)

$18 : 3 = 6$ $2 \times 6 = 12$ $\frac{2}{3}$ av 18 = 12

d)

$10 : 5 = 2$ $2 \times 2 = 4$ $\frac{2}{5}$ av 10 = 4

e)

$12 : 4 = 3$ $3 \times 3 = 9$ $\frac{3}{4}$ av 12 = 9

f)

$21 : 3 = 7$ $2 \times 7 = 14$ $\frac{2}{3}$ av 21 = 14

g)

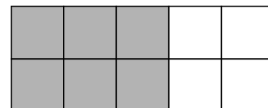
$24 : 8 = 3$ $3 \times 3 = 9$ $\frac{3}{8}$ av 24 = 9

h)

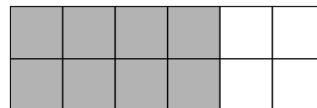
$21 : 7 = 3$ $5 \times 3 = 15$ $\frac{5}{7}$ av 21 = 15

16

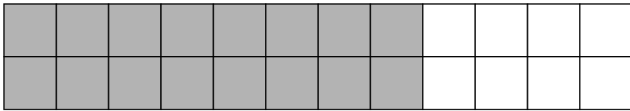
a)



b)



c)



17

- a) 2 katter drakk hverken melk eller vann.
 b) 1 av kattene fanget hverken mus eller rotter.

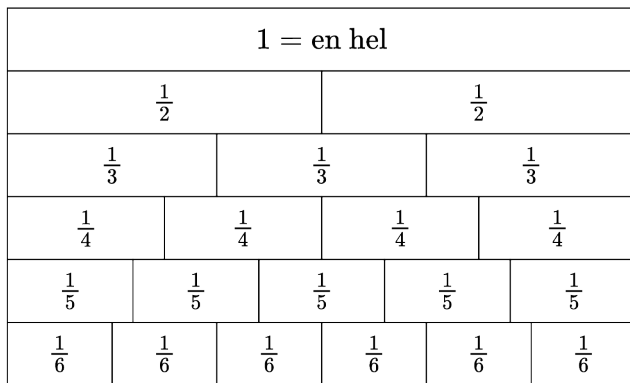
18

1 av barna drakk hverken cola eller vann.

19

- a) $\frac{3}{4}$ kilo epler koster 21 kroner.
 b) Han ga bort 6 klistremerker.
 Han har 4 klistremerker igjen.

20



- a) $\frac{1}{2} < \frac{2}{3}$ b) $\frac{3}{4} > \frac{3}{6}$
 c) $\frac{3}{4} > \frac{1}{3}$ d) $\frac{2}{5} < \frac{3}{4}$
 e) $\frac{4}{5} > \frac{3}{4}$ f) $\frac{3}{6} = \frac{1}{2}$
 g) $\frac{4}{6} < \frac{4}{5}$ h) $\frac{2}{4} > \frac{2}{5}$

21

$\frac{4}{5} \quad \frac{3}{6}$

22

$\frac{4}{5} \quad \frac{5}{6} \quad \frac{3}{5} \quad \frac{3}{4}$

23

b) $\frac{1 \times 4}{2 \times 4} = \frac{4}{8} < \frac{5}{8}$

c) $\frac{1 \times 2}{2 \times 2} = \frac{2}{4} < \frac{3}{4}$

d) $\frac{1 \times 5}{2 \times 5} = \frac{5}{10} > \frac{4}{10}$

e) $\frac{1 \times 6}{2 \times 6} = \frac{6}{12} > \frac{5}{12}$

f) $\frac{1 \times 8}{2 \times 8} = \frac{8}{16} < \frac{8}{16}$

24

a) $\frac{1}{3} + \frac{1}{3} = \frac{2}{3}$ b) $\frac{2}{7} + \frac{3}{7} = \frac{5}{7}$

c) $\frac{2}{11} + \frac{1}{11} = \frac{3}{11}$ d) $\frac{4}{9} + \frac{3}{9} = \frac{7}{9}$

e) $\frac{6}{17} + \frac{2}{17} = \frac{8}{17}$ f) $\frac{2}{9} + \frac{3}{9} = \frac{5}{9}$

25

a) $\frac{4}{5} - \frac{1}{5} = \frac{3}{5}$ b) $\frac{3}{7} - \frac{1}{7} = \frac{2}{7}$

c) $\frac{5}{11} - \frac{2}{11} = \frac{3}{11}$ d) $\frac{8}{9} - \frac{5}{9} = \frac{3}{9}$

e) $\frac{6}{17} - \frac{2}{17} = \frac{4}{17}$ f) $\frac{6}{9} - \frac{3}{9} = \frac{3}{9}$

26

a) $\frac{6}{17} + \frac{2}{17} + \frac{3}{17} = \frac{11}{17}$

b) $\frac{3}{15} + \frac{4}{15} + \frac{2}{15} = \frac{9}{15}$

27

a) $\frac{1}{4} + \frac{2}{4} = \frac{3}{4}$ b) $\frac{3}{11} + \frac{7}{11} = \frac{10}{11}$

c) $\frac{9}{17} + \frac{3}{17} = \frac{12}{17}$ d) $\frac{12}{33} + \frac{13}{33} = \frac{25}{33}$

e) $\frac{5}{25} + \frac{20}{25} = \frac{25}{25}$ f) $\frac{7}{19} + \frac{10}{19} = \frac{17}{19}$

28

a) $\frac{7}{14} - \frac{3}{14} = \frac{10}{14}$ b) $\frac{8}{10} - \frac{7}{10} = \frac{1}{10}$

c) $\frac{14}{17} - \frac{3}{17} = \frac{11}{17}$ d) $\frac{10}{15} - \frac{3}{15} = \frac{7}{15}$

e) $\frac{15}{19} - \frac{13}{19} = \frac{2}{19}$ f) $\frac{6}{9} - \frac{1}{9} = \frac{5}{9}$

29

a) $\frac{6}{17} - \frac{1}{17} + \frac{5}{17} = \frac{10}{17}$

b) $\frac{4}{12} - \frac{3}{12} + \frac{8}{12} = \frac{9}{12}$

c) $\frac{7}{11} + \frac{3}{11} - \frac{4}{11} + \frac{2}{11} = \frac{8}{11}$

d) $\frac{20}{35} + \frac{4}{35} - \frac{6}{35} + \frac{1}{35} = \frac{19}{35}$

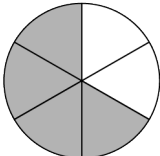
e) $\frac{3}{115} + \frac{2}{115} - \frac{1}{115} + \frac{7}{115} = \frac{11}{115}$

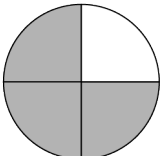
f) $\frac{5}{335} + \frac{5}{335} - \frac{3}{335} + \frac{2}{335} = \frac{9}{335}$

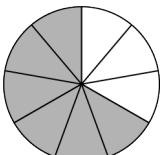
g) $\frac{10}{1000} + \frac{5}{1000} - \frac{4}{1000} + \frac{1}{1000} = \frac{12}{1000}$

h) $\frac{15}{1500} + \frac{15}{1500} - \frac{4}{1500} + \frac{1}{1500} = \frac{27}{1500}$

30

a)  $\frac{2}{3} \xrightarrow[\times 2]{=} \frac{4}{6}$

b)  $\frac{3}{4} \xrightarrow[\times 2]{=} \frac{6}{8}$

c)  $\frac{2}{3} \xrightarrow[\times 3]{=} \frac{6}{9}$

31

a) $\frac{1}{3} \xrightarrow[\times 2]{=} \frac{2}{6}$

b) $\frac{1}{2} \xrightarrow[\times 5]{=} \frac{5}{10}$

c) $\frac{2}{5} \xrightarrow[\times 2]{=} \frac{4}{10}$

d) $\frac{3}{4} \xrightarrow[\times 2]{=} \frac{6}{8}$

e) $\frac{1}{4} \xrightarrow[\times 3]{=} \frac{3}{12}$

f) $\frac{1}{6} \xrightarrow[\times 2]{=} \frac{2}{12}$

32-35

$3 \times \frac{1}{2} + \frac{1 \times 2}{3 \times 2} = \frac{3}{6} + \frac{2}{6} = \frac{5}{6}$

$5 \times \frac{1}{2} + \frac{1 \times 2}{5 \times 2} = \frac{5}{10} + \frac{2}{10} = \frac{7}{10}$

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

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

$5 \times \frac{2}{3} + \frac{1 \times 3}{5 \times 3} = \frac{10}{15} + \frac{3}{15} = \frac{13}{15}$

$3 \times \frac{2}{5} + \frac{1 \times 5}{3 \times 5} = \frac{6}{15} + \frac{5}{15} = \frac{11}{15}$

36

$3 \times \frac{1}{4} + \frac{1 \times 4}{3 \times 4} = \frac{3}{12} + \frac{4}{12} = \frac{7}{12}$

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

$5 \times \frac{1}{2} + \frac{1 \times 2}{5 \times 2} = \frac{5}{10} + \frac{2}{10} = \frac{7}{10}$

$4 \times \frac{2}{3} + \frac{1 \times 3}{4 \times 3} = \frac{8}{12} + \frac{3}{12} = \frac{11}{12}$

$3 \times \frac{2}{5} + \frac{1 \times 5}{3 \times 5} = \frac{6}{15} + \frac{5}{15} = \frac{11}{15}$

$2 \times \frac{1}{3} + \frac{1 \times 3}{2 \times 3} = \frac{2}{6} + \frac{3}{6} = \frac{5}{6}$

37

$$a) \quad 3 \times \frac{1}{2} + \frac{1}{3} \times 2 = \frac{3}{6} + \frac{2}{6} = \frac{5}{6}$$

$$b) \quad 5 \times \frac{1}{3} + \frac{1}{5} \times 3 = \frac{5}{15} + \frac{3}{15} = \frac{8}{15}$$

$$c) \quad 5 \times \frac{1}{2} + \frac{1}{5} \times 2 = \frac{5}{10} + \frac{2}{10} = \frac{7}{10}$$

$$d) \quad 3 \times \frac{2}{5} + \frac{1}{3} \times 5 = \frac{6}{15} + \frac{5}{15} = \frac{11}{15}$$

$$e) \quad 2 \times \frac{3}{5} + \frac{1}{2} \times 5 = \frac{6}{10} + \frac{5}{10} = \frac{11}{10}$$

$$f) \quad 2 \times \frac{2}{3} + \frac{1}{2} \times 3 = \frac{4}{6} + \frac{3}{6} = \frac{7}{6}$$

38

$$a) \quad 3 \times \frac{1}{5} + \frac{2}{3} \times 5 = \frac{3}{15} + \frac{10}{15} = \frac{13}{15}$$

$$b) \quad 2 \times \frac{4}{5} + \frac{1}{2} \times 5 = \frac{8}{10} + \frac{5}{10} = \frac{13}{10}$$

$$c) \quad 5 \times \frac{2}{3} + \frac{2}{5} \times 3 = \frac{10}{15} + \frac{6}{15} = \frac{16}{15}$$

$$d) \quad 3 \times \frac{1}{2} - \frac{1}{3} \times 2 = \frac{3}{6} - \frac{2}{6} = \frac{1}{6}$$

$$e) \quad 2 \times \frac{2}{3} - \frac{1}{2} \times 3 = \frac{4}{6} - \frac{3}{6} = \frac{1}{6}$$

$$f) \quad 2 \times \frac{5}{3} - \frac{1}{2} \times 3 = \frac{10}{6} - \frac{3}{6} = \frac{7}{6}$$

39

$$a) \quad 5 \times \frac{1}{3} + \frac{1}{5} \times 3 = \frac{5}{15} + \frac{3}{15} = \frac{8}{15}$$

$$b) \quad 5 \times \frac{1}{3} + \frac{1}{5} \times 3 = \frac{5}{15} + \frac{3}{15} = \frac{8}{15}$$

$$c) \quad 6 \times \frac{1}{5} + \frac{1}{6} \times 5 = \frac{6}{30} + \frac{5}{30} = \frac{11}{30}$$

$$d) \quad 4 \times \frac{2}{5} + \frac{3}{4} \times 5 = \frac{8}{20} + \frac{15}{20} = \frac{23}{20}$$

$$e) \quad 3 \times \frac{1}{5} + \frac{2}{3} \times 5 = \frac{3}{15} + \frac{10}{15} = \frac{13}{15}$$

$$f) \quad 5 \times \frac{1}{6} + \frac{2}{5} \times 6 = \frac{5}{30} + \frac{12}{30} = \frac{17}{30}$$

40

$$a) \quad 5 \times \frac{3}{4} + \frac{4}{5} \times 4 = \frac{15}{20} + \frac{16}{20} = \frac{31}{20}$$

$$b) \quad 6 \times \frac{3}{4} + \frac{5}{6} \times 6 = \frac{18}{24} + \frac{30}{24} = \frac{48}{24}$$

$$c) \quad 3 \times \frac{3}{4} + \frac{2}{3} \times 4 = \frac{9}{12} + \frac{8}{12} = \frac{17}{12}$$

$$d) \quad 3 \times \frac{3}{4} - \frac{2}{3} \times 4 = \frac{9}{12} - \frac{8}{12} = \frac{1}{12}$$

$$e) \quad 4 \times \frac{3}{5} - \frac{1}{4} \times 5 = \frac{12}{20} - \frac{5}{20} = \frac{7}{20}$$

$$f) \quad 5 \times \frac{5}{6} - \frac{3}{5} \times 6 = \frac{25}{30} - \frac{18}{30} = \frac{43}{30}$$

41

$$a) \quad 7 \times \frac{1}{3} + \frac{1}{7} \times 3 = \frac{7}{21} + \frac{3}{21} = \frac{10}{21}$$

$$b) \quad 8 \times \frac{1}{5} + \frac{1}{8} \times 5 = \frac{8}{40} + \frac{5}{40} = \frac{13}{40}$$

$$c) \quad 4 \times \frac{1}{9} + \frac{1}{4} \times 9 = \frac{4}{36} + \frac{9}{36} = \frac{13}{36}$$

$$d) \quad 7 \times \frac{2}{3} + \frac{1}{7} \times 3 = \frac{14}{21} + \frac{3}{21} = \frac{17}{21}$$

$$e) \quad 9 \times \frac{2}{5} + \frac{2}{9} \times 5 = \frac{18}{45} + \frac{10}{45} = \frac{28}{45}$$

$$f) \quad 6 \times \frac{5}{7} + \frac{1}{6} \times 7 = \frac{30}{42} + \frac{7}{42} = \frac{37}{42}$$

42

$$a) \quad 7 \times \frac{3}{4} - \frac{1}{7} \times 4 = \frac{21}{28} - \frac{4}{28} = \frac{25}{28}$$

$$b) \quad 8 \times \frac{5}{7} + \frac{3}{8} \times 7 = \frac{40}{56} + \frac{21}{56} = \frac{61}{56}$$

$$c) \quad 7 \times \frac{5}{9} - \frac{1}{7} \times 9 = \frac{35}{63} - \frac{9}{63} = \frac{24}{63}$$

43

$$a) 5 \times \frac{1}{2} + \frac{1}{10} = \frac{5}{10} + \frac{1}{10} = \frac{6}{10}$$

$$b) 2 \times \frac{1}{5} + \frac{1}{10} = \frac{2}{10} + \frac{1}{10} = \frac{3}{10}$$

$$c) 4 \times \frac{1}{2} + \frac{1}{8} = \frac{4}{8} + \frac{1}{8} = \frac{5}{8}$$

$$d) 2 \times \frac{1}{3} + \frac{1}{6} = \frac{2}{6} + \frac{1}{6} = \frac{3}{6}$$

$$e) 4 \times \frac{1}{5} + \frac{1}{20} = \frac{4}{20} + \frac{1}{20} = \frac{5}{20}$$

$$f) 5 \times \frac{1}{5} + \frac{1}{25} = \frac{5}{25} + \frac{1}{25} = \frac{6}{25}$$

44

$$a) 5 \times \frac{2}{3} + \frac{1}{15} = \frac{10}{15} + \frac{1}{15} = \frac{11}{15}$$

$$b) 2 \times \frac{2}{5} + \frac{1}{10} = \frac{4}{10} + \frac{1}{10} = \frac{5}{10}$$

$$c) 3 \times \frac{3}{5} + \frac{2}{15} = \frac{9}{15} + \frac{2}{15} = \frac{11}{15}$$

$$d) 4 \times \frac{2}{3} + \frac{1}{12} = \frac{8}{12} + \frac{1}{12} = \frac{9}{12}$$

$$e) 2 \times \frac{1}{4} + \frac{3}{8} = \frac{2}{8} + \frac{3}{8} = \frac{5}{8}$$

$$f) 3 \times \frac{1}{4} + \frac{3}{12} = \frac{3}{12} + \frac{3}{12} = \frac{6}{12}$$

45

$$a) \frac{7}{20} - \frac{1 \times 4}{5 \times 4} = \frac{7}{20} - \frac{4}{20} = \frac{3}{20}$$

$$b) \frac{3}{8} - \frac{1 \times 2}{4 \times 2} = \frac{3}{8} - \frac{2}{8} = \frac{1}{8}$$

$$c) 5 \times \frac{1}{2} - \frac{3}{10} = \frac{5}{10} - \frac{3}{10} = \frac{2}{10}$$

46

$$a) 2 \times \frac{1}{8} + \frac{3}{16} = \frac{2}{16} + \frac{3}{16} = \frac{5}{16}$$

$$b) 3 \times \frac{2}{7} + \frac{4}{21} = \frac{6}{21} + \frac{4}{21} = \frac{10}{21}$$

$$c) 4 \times \frac{1}{6} + \frac{6}{24} = \frac{4}{24} + \frac{6}{24} = \frac{10}{24}$$

$$d) 2 \times \frac{1}{9} + \frac{3}{18} = \frac{2}{18} + \frac{3}{18} = \frac{5}{18}$$

$$e) 5 \times \frac{5}{6} + \frac{7}{30} = \frac{25}{30} + \frac{7}{30} = \frac{32}{30}$$

$$f) \frac{7}{24} + \frac{1 \times 3}{8 \times 3} = \frac{7}{24} + \frac{3}{24} = \frac{10}{24}$$

47

$$a) 2 \times \frac{7}{8} - \frac{1}{16} = \frac{14}{16} - \frac{1}{16} = \frac{13}{16}$$

$$b) \frac{5}{21} - \frac{1 \times 3}{7 \times 3} = \frac{5}{21} - \frac{3}{21} = \frac{2}{21}$$

$$c) 8 \times \frac{5}{6} - \frac{3}{48} = \frac{40}{48} - \frac{3}{48} = \frac{37}{48}$$

$$d) \frac{5}{8} + \frac{3 \times 2}{4 \times 2} = \frac{5}{8} + \frac{6}{8} = \frac{11}{8}$$

$$e) 3 \times \frac{4}{9} - \frac{1}{27} = \frac{12}{27} - \frac{1}{27} = \frac{11}{27}$$

$$f) 4 \times \frac{3}{8} - \frac{5}{32} = \frac{12}{32} - \frac{5}{32} = \frac{7}{32}$$

48

$$a) 3 \times \frac{1}{4} + \frac{1}{12} = \frac{3}{12} + \frac{1}{12} = \frac{4}{12}$$

$$b) \frac{1}{7} + \frac{1}{7} = \frac{2}{7}$$

$$c) 5 \times \frac{2}{3} + \frac{4 \times 3}{5 \times 3} = \frac{10}{15} + \frac{12}{15} = \frac{22}{15}$$

$$d) \frac{7}{25} - \frac{1 \times 5}{5 \times 5} = \frac{7}{25} - \frac{5}{25} = \frac{2}{25}$$

$$e) \frac{3}{12} + \frac{1 \times 3}{4 \times 3} = \frac{3}{12} + \frac{3}{12} = \frac{6}{12}$$

$$f) \quad 7 \times \frac{1}{2} - \frac{1}{14} = \frac{7}{14} - \frac{1}{14} = \frac{6}{14}$$

49

$$a) \quad 3 \times \frac{1}{6} + \frac{1}{18} = \frac{3}{18} + \frac{1}{18} = \frac{4}{18}$$

$$b) \quad 8 \times \frac{1}{5} + \frac{7}{40} = \frac{8}{40} + \frac{7}{40} = \frac{15}{40}$$

$$c) \quad \frac{7}{24} + \frac{1 \times 4}{6 \times 4} = \frac{7}{24} + \frac{4}{24} = \frac{11}{24}$$

$$d) \quad 5 \times \frac{1}{6} + \frac{1 \times 6}{5 \times 6} = \frac{5}{30} + \frac{6}{30} = \frac{11}{30}$$

$$f) \quad \frac{5}{21} - \frac{1 \times 3}{7 \times 3} = \frac{5}{21} - \frac{3}{21} = \frac{2}{21}$$

50

a)

$$\frac{3}{5} \text{ time} = 60 \text{ minutter} : 5 \times 3$$

$$= 12 \text{ minutter} \times 3 = 36 \text{ minutter}$$

$$\frac{1}{10} \text{ time} = 60 \text{ minutter} : 10 = 6 \text{ minutter}$$

$$36 \text{ minutter} + 6 \text{ minutter} = 42 \text{ minutter}$$

$$60 \text{ minutter} - 42 \text{ minutter} = 18 \text{ minutter}$$

Iben hadde 18 minutter igjen til å spise lunsj.

b)

$$\frac{1}{10} \text{ time} = 6 \text{ minutter}$$

$$3 \times \frac{1}{10} \text{ time} = 18 \text{ minutter}$$

$$18 \text{ minutter} = \frac{3}{10} \text{ time}$$

Hun hadde $\frac{3}{10}$ time igjen til å spise lunsj.

51

a) $\frac{1}{20}$ ble malt grønn

b) $\frac{1}{5} \times 4 = \frac{4}{20}$ $\frac{1}{5}$ av veggene er blå.

c) $\frac{1}{2}$ av 20 = 10. Hvit ble brukt til å male $\frac{1}{2}$ av veggene.

52

$$\frac{1}{5} \text{ av en time} = 12 \text{ minutter}$$

$$\frac{2}{5} \text{ av en time} = 12 \text{ minutter} \times 2$$

$$= 24 \text{ minutter}$$

$$\frac{3}{5} \text{ av en time} = 12 \text{ minutter} \times 3$$

$$= 36 \text{ minutter}$$

$$24 \text{ minutter} + 36 \text{ minutter} = 60 \text{ minutter}$$

$$07.15 + 1 \text{ time} = 08.15$$

Sverre kom til skolen 08.15.

53

$$\frac{2}{10} + \frac{2}{5} + \frac{7}{10} + \frac{6}{5} =$$

$$\frac{2}{10} + \frac{2 \times 2}{2 \times 5} + \frac{7}{10} + \frac{2 \times 6}{2 \times 5} =$$

$$\frac{2}{10} + \frac{4}{10} + \frac{7}{10} + \frac{12}{10} = \frac{25}{10} = 2\frac{5}{10}$$

De har kjøpt tre hele pizzaer og spist 2 og en halv.

54

Buksen koster $\frac{1}{2}$ av dunjakken:

$$\frac{1}{2} \text{ av } \frac{3}{5} = \frac{2 \times 3}{2 \times 5} = \frac{6}{10} : 2 = \frac{3}{10}$$

Buksen er $\frac{3}{10}$ av budsjettet.

Jakken er $\frac{6}{10}$ av budsjettet.

Det totale budsjettet er $\frac{10}{10}$.

Det er $\frac{1}{10}$ igjen av budsjettet:

$$\frac{10}{10} - \frac{6}{10} - \frac{3}{10} = \frac{1}{10}$$

Vesken er derfor $\frac{1}{10}$ av budsjettet.

Veske + 1000 kr = bukse

$$\frac{1}{10} + \frac{2}{10} = \frac{3}{10}$$

$$\frac{2}{10} = 1000 \text{ kr}$$

$$\frac{1}{10} = 500 \text{ kr}$$

$$\text{Jakke} = \frac{6}{10} = 6 \times 500 \text{ kr} = 3000 \text{ kr}$$

$$\text{Bukse} = \frac{3}{10} = 3 \times 500 \text{ kr} = 1500 \text{ kr}$$

$$\text{Veske} = \frac{1}{10} = 1 \times 500 \text{ kr} = 500 \text{ kr}$$

$$3000 \text{ kr} + 1500 \text{ kr} + 500 \text{ kr} = 5000 \text{ kr}$$

Anne hadde 5000 kr til å begynne med.

55

$$\frac{1}{2} \text{ av budsjettet} = 20000 + \frac{1}{3}$$

Vi vet at de to gjenværende tredelene av budsjettet utgjør den andre halvdelen.

$$\frac{1}{2} \text{ av budsjettet} = \frac{1}{3} + \frac{1}{3}$$

Tredelene må være like i begge halvdelene av budsjettet. Fordi vi vet at én halvdel består av to tredeler, kan vi se at $\frac{1}{3} = 20\,000$.

$$\frac{1}{4} \text{ av budsjettet} = 20000$$

$$\frac{1}{1} \text{ av budsjettet} = 20000 \times 4 = 80000$$

Ida Sofie hadde 80 000 kr til å begynne med.