<u>LAUSN</u>

Sýndu alla útreikninga

1. (20%) Reiknaðu án vasareiknis:

   a) $\ \dfrac{3}{12} + \dfrac{2}{15} = \ \dfrac{5\cdot 3}{5\cdot 12} + \dfrac{4\cdot 2}{4\cdot 15} = \dfrac{15}{60} + \dfrac{8}{60} = \dfrac{23}{60}$

   b) $\ \dfrac{9}{15} \cdot \dfrac{5}{12} = \dfrac{3\cdot 3\cdot 5}{3\cdot 5\cdot 3\cdot 4} = \dfrac{1}{4}$

   c) $\ \dfrac{14}{15} : \dfrac{7}{20} = \dfrac{14}{15} \cdot \dfrac{20}{7} = \dfrac{2\cdot 7\cdot 2\cdot 5}{3\cdot 5\cdot 7} = \dfrac{8}{3} = 2\dfrac{2}{3}$

   d) $\ \dfrac{2+6\cdot 2}{\frac{1}{2}} = \dfrac{14}{\frac{1}{2}} = 14 \cdot \dfrac{2}{1} = 28$

2. (8%) Reiknaðu með vasareikni. Skilaðu svari sem almennu broti.

$$\frac{2 \cdot \dfrac{3}{4} - 4 : \dfrac{6}{7}}{\dfrac{1}{5} + \dfrac{2}{3}} = -\frac{95}{26}$$

3. (24%) Þáttaðu eftirtaldar liðastærðir:

$a)\ \ x^2 - x = \boldsymbol{x(x-1)}$

b) $\ 2x^2 - 10x = \boldsymbol{2x(x-5)}$

c) $2abc - 4b = \boldsymbol{2b(ac - 2)}$

d) $6x^2z + 3xy + 9xyz = \boldsymbol{3x(2xz + y + 3yz)}$

e) $9x^2 - 6x^4 = \boldsymbol{3x^2(3 - 2x^2)}$

f) $x^2 + 4x = \boldsymbol{x(x + 4)}$

4. (48%) Þáttaðu eftirtaldar liðastærðir:

a) $1 - 4x^2 = 1 - 2^2x^2 = \boldsymbol{(1 + 2x)(1 - 2x)}$

b) $4x^2 - y^2 = \boldsymbol{(2x + y)(2x - y)}$

c) $x^2 - 9 = \boldsymbol{(x + 3)(x - 3)}$

d) $x^4 - 1 = \boldsymbol{(x^2 + 1)(x^2 - 1)}$

e) $6x^2 - 6 = 6(x^2 - 1) = \boldsymbol{6(x + 1)(x - 1)}$

f) $xy - xy^2 = \boldsymbol{xy(1 - y)}$

g) $x^2 - 2x - 3 = \boldsymbol{(x + 1)(x - 3)}$

h) $x^2 - 8x + 7 = \boldsymbol{(x - 1)(x - 7)}$

i) $x^2 + x - 6 = \boldsymbol{(x + 3)(x - 2)}$

j) $x^2 + 3x - 10 = \boldsymbol{(x + 5)(x - 2)}$

k) $5x^2 + 5x - 10 = 5(x + 2)(x - 1)$

l) $2x^2 + 17x - 9 = \boldsymbol{(2x - 1)(x + 9)}$