

***Model Answers:* Cancelling Down Fractions**

Cancelling Down
Fractions study guide



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

The highest common factor of 4 and 8 is:

$$\text{HCF}(4,8) = 4$$

Now express the numerator and denominator as multiples of 4:

$$4 = 1 \times 4$$

$$8 = 2 \times 4$$

And so you can use this and cancel the 4's:

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

Alternatively you can simplify the fraction using prime factors. Express the numerator and denominator in their prime factor forms:

$$4 = 2 \times 2$$

$$8 = 2 \times 2 \times 2$$

And so use these and cancel terms that appear in the numerator and the denominator:

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

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

The highest common factor of 6 and 8 is:

$$\text{HCF}(6,8) = 2$$

Now express the numerator and denominator as multiples of 2:

$$6 = 2 \times 3$$

$$8 = 2 \times 4$$

And so you can use this and cancel the 2's:

$$\frac{6}{8} = \frac{\cancel{2} \times 3}{\cancel{2} \times 4} = \frac{3}{4}$$

Alternatively you can simplify the fraction using prime factors. Express the numerator and denominator in their prime factor forms:

$$6 = 2 \times 3$$

$$8 = 2 \times 2 \times 2$$

And so use these and cancel terms that appear in the numerator and the denominator:

$$\frac{6}{8} = \frac{\cancel{2} \times 3}{\cancel{2} \times 2 \times 2} = \frac{3}{2 \times 2} = \frac{3}{4}$$

c) $\frac{8}{8} = 1$

The highest common factor of 8 and 8 is:

$$\text{HCF}(8,8) = 8$$

Now express the numerator and denominator as multiples of 8:

$$8 = 1 \times 8$$

And so you can use this and cancel the 8's:

$$\frac{8}{8} = \frac{1 \times \cancel{8}}{1 \times \cancel{8}} = \frac{1}{1} = 1$$

Alternatively you can simplify the fraction using prime factors. Express the numerator and denominator in their prime factor forms:

$$8 = 2 \times 2 \times 2$$

And so use these and cancel terms that appear in the numerator and the denominator:

$$\frac{8}{8} = \frac{\cancel{2} \times \cancel{2} \times \cancel{2}}{\cancel{2} \times \cancel{2} \times \cancel{2}} = \frac{1}{1} = 1$$

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

The highest common factor of 12 and 8 is:

$$\text{HCF}(12, 8) = 4$$

Now express the numerator and denominator as multiples of 4:

$$12 = 3 \times 4$$

$$8 = 2 \times 4$$

And so you can use this and cancel the 4's:

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

Alternatively you can simplify the fraction using prime factors. Express the numerator and denominator in their prime factor forms:

$$12 = 2 \times 2 \times 3$$

$$8 = 2 \times 2 \times 2$$

And so use these and cancel terms that appear in the numerator and the denominator:

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

e) $\frac{44}{8} = \frac{11}{2}$

The highest common factor of 44 and 8 is:

$$\text{HCF}(44,8) = 4$$

Now express the numerator and denominator as multiples of 4:

$$44 = 4 \times 11 \qquad 8 = 4 \times 2$$

And so you can use this and cancel the 4's:

$$\frac{44}{8} = \frac{\cancel{4} \times 11}{\cancel{4} \times 2} = \frac{11}{2}$$

Alternatively you can simplify the fraction using prime factors. Express the numerator and denominator in their prime factor forms:

$$44 = 2 \times 2 \times 11 \qquad 8 = 2 \times 2 \times 2$$

And so use these and cancel terms that appear in the numerator and the denominator:

$$\frac{44}{8} = \frac{\cancel{2} \times \cancel{2} \times 11}{\cancel{2} \times \cancel{2} \times 2} = \frac{11}{2}$$

f) $\frac{5}{15} = \frac{1}{3}$

The highest common factor of 5 and 15 is:

$$\text{HCF}(5,15) = 5$$

Now express the numerator and denominator as multiples of 5:

$$5 = 5 \times 1 \qquad 15 = 5 \times 3$$

And so you can use this and cancel the 5's:

$$\frac{5}{15} = \frac{\cancel{5} \times 1}{\cancel{5} \times 3} = \frac{1}{3}$$

Alternatively you can simplify the fraction using prime factors. Express the numerator and denominator in their prime factor forms:

$$5 = 1 \times 5$$

$$15 = 3 \times 5$$

And so use these and cancel terms that appear in the numerator and the denominator:

$$\frac{5}{15} = \frac{1 \times \cancel{5}}{3 \times \cancel{5}} = \frac{1}{3}$$

g) $\frac{44}{11} = 4$

The highest common factor of 44 and 11 is:

$$\text{HCF}(44, 11) = 11$$

Now express the numerator and denominator as multiples of 11:

$$44 = 4 \times 11$$

$$11 = 1 \times 11$$

And so you can use this and cancel the 11's:

$$\frac{44}{11} = \frac{4 \times \cancel{11}}{1 \times \cancel{11}} = \frac{4}{1} = 4$$

Alternatively you can simplify the fraction using prime factors. Express the numerator and denominator in their prime factor forms:

$$44 = 2 \times 2 \times 11$$

$$11 = 1 \times 11$$

And so use these and cancel terms that appear in the numerator and the denominator:

$$\frac{44}{11} = \frac{2 \times 2 \times \cancel{11}}{1 \times \cancel{11}} = \frac{2 \times 2}{1} = \frac{4}{1} = 4$$

$$\text{h) } \frac{12}{36} = \frac{1}{3}$$

The highest common factor of 12 and 36 is:

$$\text{HCF}(12, 36) = 12$$

Now express the numerator and denominator as multiples of 12:

$$12 = 1 \times 12$$

$$36 = 3 \times 12$$

And so you can use this and cancel the 12's:

$$\frac{12}{36} = \frac{1 \times \cancel{12}}{3 \times \cancel{12}} = \frac{1}{3}$$

Alternatively you can simplify the fraction using prime factors. Express the numerator and denominator in their prime factor forms:

$$12 = 2 \times 2 \times 3$$

$$36 = 2 \times 2 \times 3 \times 3$$

And so use these and cancel terms that appear in the numerator and the denominator:

$$\frac{12}{36} = \frac{\cancel{2} \times \cancel{2} \times 3}{\cancel{2} \times \cancel{2} \times \cancel{3} \times 3} = \frac{1}{3}$$

$$\text{i) } \frac{21}{77} = \frac{3}{11}$$

The highest common factor of 21 and 77 is:

$$\text{HCF}(21, 77) = 7$$

Now express the numerator and denominator as multiples of 7:

$$21 = 3 \times 7$$

$$77 = 7 \times 11$$

And so you can use this and cancel the 7's:

$$\frac{21}{77} = \frac{3 \times \cancel{7}}{11 \times \cancel{7}} = \frac{3}{11}$$

Alternatively you can simplify the fraction using prime factors. Express the numerator and denominator in their prime factor forms:

$$21 = 3 \times 7$$

$$77 = 7 \times 11$$

And so use these and cancel terms that appear in the numerator and the denominator:

$$\frac{21}{77} = \frac{3 \times \cancel{7}}{\cancel{7} \times 11} = \frac{3}{11}$$

j) $\frac{17}{19} = \frac{17}{19}$

The highest common factor of 17 and 19 is:

$$\text{HCF}(17, 19) = 1$$

which means that the fraction cannot be cancelled down.

2.

a) $\frac{50}{120} = \frac{5}{12}$

The highest common factor of 50 and 120 is:

$$\text{HCF}(50, 120) = 10$$

Now express the numerator and denominator as multiples of 10:

$$50 = 5 \times 10$$

$$120 = 12 \times 10$$

And so you can use this and cancel the 10's:

$$\frac{50}{120} = \frac{5 \times \cancel{10}}{12 \times \cancel{10}} = \frac{5}{12}$$

Alternatively you can simplify the fraction using prime factors. Express the numerator and denominator in their prime factor forms:

$$50 = 2 \times 5 \times 5$$

$$120 = 2 \times 2 \times 2 \times 3 \times 5$$

And so use these and cancel terms that appear in the numerator and the denominator:

$$\frac{50}{120} = \frac{\cancel{2} \times \cancel{5} \times 5}{\cancel{2} \times 2 \times 2 \times 3 \times \cancel{5}} = \frac{5}{2 \times 2 \times 3} = \frac{5}{12}$$

b) $\frac{165}{210} = \frac{11}{14}$

The highest common factor of 165 and 210 is:

$$\text{HCF}(165, 210) = 15$$

Now express the numerator and denominator as multiples of 15:

$$165 = 11 \times 15$$

$$210 = 14 \times 15$$

And so you can use this and cancel the 15's:

$$\frac{165}{210} = \frac{11 \times \cancel{15}}{14 \times \cancel{15}} = \frac{11}{14}$$

Alternatively you can simplify the fraction using prime factors. Express the numerator and denominator in their prime factor forms:

$$165 = 3 \times 5 \times 11$$

$$210 = 2 \times 3 \times 5 \times 7$$

And so use these and cancel terms that appear in the numerator and the denominator:

$$\frac{165}{210} = \frac{\cancel{3} \times \cancel{5} \times 11}{2 \times \cancel{3} \times \cancel{5} \times 7} = \frac{11}{2 \times 7} = \frac{11}{14}$$

$$c) \quad \frac{210}{240} = \frac{7}{8}$$

The highest common factor of 210 and 240 is:

$$\text{HCF}(210, 240) = 30$$

Now express the numerator and denominator as multiples of 30:

$$210 = 7 \times 30$$

$$240 = 8 \times 30$$

And so you can use this and cancel the 30's:

$$\frac{210}{240} = \frac{7 \times \cancel{30}}{8 \times \cancel{30}} = \frac{7}{8}$$

Alternatively you can simplify the fraction using prime factors. Express the numerator and denominator in their prime factor forms:

$$210 = 2 \times 3 \times 5 \times 7$$

$$240 = 2 \times 2 \times 2 \times 2 \times 3 \times 5$$

And so use these and cancel terms that appear in the numerator and the denominator:

$$\frac{210}{240} = \frac{\cancel{2} \times \cancel{3} \times \cancel{5} \times 7}{\cancel{2} \times 2 \times 2 \times 2 \times \cancel{3} \times \cancel{5}} = \frac{7}{2 \times 2 \times 2} = \frac{7}{8}$$

$$d) \quad \frac{162}{222} = \frac{27}{37}$$

The highest common factor of 162 and 222 is:

$$\text{HCF}(162, 222) = 6$$

Now express the numerator and denominator as multiples of 6:

$$162 = 6 \times 27$$

$$222 = 6 \times 37$$

And so you can use this and cancel the 6's:

$$\frac{162}{222} = \frac{\cancel{6} \times 27}{\cancel{6} \times 37} = \frac{27}{37}$$

Alternatively you can simplify the fraction using prime factors. Express the numerator and denominator in their prime factor forms:

$$162 = 2 \times 3 \times 3 \times 3 \times 3$$

$$222 = 2 \times 3 \times 37$$

And so use these and cancel terms that appear in the numerator and the denominator:

$$\frac{162}{222} = \frac{\cancel{2} \times \cancel{3} \times 3 \times 3 \times 3}{\cancel{2} \times \cancel{3} \times 37} = \frac{3 \times 3 \times 3}{37} = \frac{27}{37}$$

e) $\frac{144}{228} = \frac{12}{19}$

The highest common factor of 144 and 228 is:

$$\text{HCF}(144, 228) = 12$$

Now express the numerator and denominator as multiples of 12:

$$144 = 12 \times 12$$

$$228 = 12 \times 19$$

And so you can use this and cancel the 12's:

$$\frac{144}{228} = \frac{\cancel{12} \times 12}{\cancel{12} \times 19} = \frac{12}{19}$$

Alternatively you can simplify the fraction using prime factors. Express the numerator and denominator in their prime factor forms:

$$144 = 2 \times 2 \times 2 \times 2 \times 3 \times 3$$

$$228 = 2 \times 2 \times 3 \times 19$$

And so use these and cancel terms that appear in the numerator and the denominator:

$$\frac{144}{228} = \frac{\cancel{2} \times \cancel{2} \times 2 \times 2 \times \cancel{3} \times 3}{\cancel{2} \times \cancel{2} \times \cancel{3} \times 19} = \frac{2 \times 2 \times 3}{19} = \frac{12}{19}$$

$$f) \quad \frac{280}{744} = \frac{35}{93}$$

The highest common factor of 280 and 744 is:

$$\text{HCF}(280, 744) = 8$$

Now express the numerator and denominator as multiples of 8:

$$280 = 8 \times 35$$

$$744 = 8 \times 93$$

And so you can use this and cancel the 8's:

$$\frac{280}{744} = \frac{\cancel{8} \times 35}{\cancel{8} \times 93} = \frac{35}{93}$$

Alternatively you can simplify the fraction using prime factors. Express the numerator and denominator in their prime factor forms:

$$280 = 2 \times 2 \times 2 \times 5 \times 7$$

$$744 = 2 \times 2 \times 2 \times 3 \times 31$$

And so use these and cancel terms that appear in the numerator and the denominator:

$$\frac{280}{744} = \frac{\cancel{2} \times \cancel{2} \times \cancel{2} \times 5 \times 7}{\cancel{2} \times \cancel{2} \times \cancel{2} \times 3 \times 31} = \frac{5 \times 7}{3 \times 31} = \frac{35}{93}$$

$$g) \quad \frac{390}{1530} = \frac{13}{51}$$

The highest common factor of 390 and 1530 is:

$$\text{HCF}(390, 1530) = 30$$

Now express the numerator and denominator as multiples of 30:

$$390 = 13 \times 30$$

$$1530 = 30 \times 51$$

And so you can use this and cancel the 30's:

$$\frac{390}{1530} = \frac{13 \times \cancel{30}}{\cancel{30} \times 51} = \frac{13}{51}$$

Alternatively you can simplify the fraction using prime factors. Express the numerator and denominator in their prime factor forms:

$$390 = 2 \times 3 \times 5 \times 13$$

$$1530 = 2 \times 3 \times 3 \times 5 \times 17$$

And so use these and cancel terms that appear in the numerator and the denominator:

$$\frac{390}{1530} = \frac{\cancel{2} \times \cancel{3} \times 5 \times 13}{\cancel{2} \times \cancel{3} \times 3 \times \cancel{5} \times 17} = \frac{13}{3 \times 17} = \frac{13}{51}$$

h) $\frac{420}{1260} = \frac{1}{3}$

The highest common factor of 420 and 1260 is:

$$\text{HCF}(420, 1260) = 420$$

Now express the numerator and denominator as multiples of 420:

$$420 = 1 \times 420$$

$$1260 = 3 \times 420$$

And so you can use this and cancel the 420's:

$$\frac{420}{1260} = \frac{1 \times \cancel{420}}{3 \times \cancel{420}} = \frac{1}{3}$$

Alternatively you can simplify the fraction using prime factors. Express the numerator and denominator in their prime factor forms:

$$420 = 2 \times 2 \times 3 \times 5 \times 7$$

$$1260 = 2 \times 2 \times 3 \times 3 \times 5 \times 7$$

And so use these and cancel terms that appear in the numerator and the denominator:

$$\frac{420}{1260} = \frac{\cancel{2} \times \cancel{2} \times \cancel{3} \times 5 \times \cancel{7}}{\cancel{2} \times \cancel{2} \times \cancel{3} \times 3 \times 5 \times \cancel{7}} = \frac{1}{3}$$

i) $\frac{570}{585} = \frac{38}{39}$

The highest common factor of 570 and 585 is:

$$\text{HCF}(570, 585) = 15$$

Now express the numerator and denominator as multiples of 15:

$$570 = 15 \times 38$$

$$585 = 15 \times 39$$

And so you can use this and cancel the 15's:

$$\frac{570}{585} = \frac{\cancel{15} \times 38}{\cancel{15} \times 39} = \frac{38}{39}$$

Alternatively you can simplify the fraction using prime factors. Express the numerator and denominator in their prime factor forms:

$$570 = 2 \times 3 \times 5 \times 19$$

$$585 = 3 \times 3 \times 5 \times 13$$

And so use these and cancel terms that appear in the numerator and the denominator:

$$\frac{570}{585} = \frac{2 \times \cancel{3} \times \cancel{5} \times 19}{\cancel{3} \times 3 \times \cancel{5} \times 13} = \frac{2 \times 19}{3 \times 13} = \frac{38}{39}$$

j) $\frac{725}{1100} = \frac{29}{44}$

The highest common factor of 725 and 1100 is:

$$\text{HCF}(725, 1100) = 25$$

Now express the numerator and denominator as multiples of 25:

$$725 = 25 \times 29$$

$$1100 = 25 \times 44$$

And so you can use this and cancel the 25's:

$$\frac{725}{585} = \frac{\cancel{25} \times 29}{\cancel{25} \times 44} = \frac{29}{44}$$

Alternatively you can simplify the fraction using prime factors. Express the numerator and denominator in their prime factor forms:

$$725 = 5 \times 5 \times 29$$

$$1100 = 2 \times 2 \times 5 \times 5 \times 11$$

And so use these and cancel terms that appear in the numerator and the denominator:

$$\frac{725}{1100} = \frac{\cancel{5} \times \cancel{5} \times 29}{2 \times 2 \times \cancel{5} \times \cancel{5} \times 11} = \frac{29}{2 \times 2 \times 11} = \frac{29}{44}$$



These model answers are one of a series on mathematics produced by the Learning Enhancement Team.

Scan the QR-code with a smartphone app for [more resources](#).



University of East Anglia

STUDENT SUPPORT
SERVICE