

<b>Complete solutions to Intro(d)</b>
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1. Consider each fraction as division:

$$\frac{355}{113} = 355 \div 113 = 3 \text{ remainder } 16$$

Therefore  $\frac{355}{113} = 3\frac{16}{113}$ .

Similarly

$$\frac{213}{71} = 213 \div 71 = 3$$

We also have  $\frac{878}{323} = 2\frac{232}{323}$ ,  $\frac{577}{408} = 1\frac{169}{408}$  and  $\frac{64}{7} = 9\frac{1}{7}$ .

2. We try to find a common factor between the numerator and denominator in each case:

(a) What factor is common between 7 and 21?

7, therefore

$$\frac{7}{21} = \frac{7 \times 1}{7 \times 3} = \frac{1}{3} \quad (\text{cancelling the 7's})$$

(b) 4 is common between 8 and 20, so

$$\frac{8}{20} = \frac{2 \times 4}{5 \times 4} = \frac{2}{5}$$

(c) Similarly  $\frac{72}{100} = \frac{18 \times 4}{25 \times 4} = \frac{18}{25}$ .

(d) 56 and 75 have no factors in common, so  $\frac{56}{75} = \frac{56}{75}$ .

(e) Clearly  $\frac{272}{272} = 1$ .

3. (a) Notice that  $64 = 16 \times 4$ , hence  $\frac{16}{64} = \frac{16 \times 1}{16 \times 4} = \frac{1}{4}$ . So  $\frac{16}{64}$  and  $\frac{1}{4}$  are equivalent fractions.

(b) What factor is common between 26 and 65?

13, because  $2 \times 13 = 26$  and  $5 \times 13 = 65$ . We have

$$\frac{26}{65} = \frac{2 \times 13}{5 \times 13} = \frac{2}{5} \neq \frac{1}{5}$$

Therefore  $\frac{26}{65}$  and  $\frac{1}{5}$  are not equivalent.

(c) 49 and 89 have no factor in common, hence

$$\frac{49}{89} = \frac{49}{89} \neq \frac{4}{8}$$

4. (a)  $3\frac{1}{3} = \frac{(3 \times 3) + 1}{3} = \frac{9 + 1}{3} = \frac{10}{3}$

(b)  $1\frac{70}{69} = \frac{(1 \times 69) + 70}{69} = \frac{69 + 70}{69} = \frac{139}{69}$

(c)  $9\frac{87}{100} = \frac{(9 \times 100) + 87}{100} = \frac{900 + 87}{100} = \frac{987}{100}$