

EXERCISE 6.6

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Reduce each of the following fractions to its lowest term (simplest form):

1. (i)  $40/75$

(ii)  $42/28$

(iii)  $12/52$

(iv)  $40/72$

(v)  $80/24$

(vi)  $84/56$

**Solution:**

(i)  $40/75$

We know that

Factors of 40 are

1, 2, 4, 5, 8, 10, 20 and 40

Factors of 75 are

1, 3, 5, 15 and 75

So the common factors are 1 and 5

We get HCF = 5

By dividing numerator and denominator by 5

$$40/75 \div 5/5 = 8/15$$

Hence, the simplest form of  $40/75$  is  $8/15$ .

(ii)  $42/28$

We know that

Factors of 42 are

1, 2, 3, 6, 7, 14, 21 and 42

Factors of 28 are

1, 2, 4, 7, 14 and 28

So the common factors are 1, 2 and 14

We get HCF = 14

By dividing numerator and denominator by 14

$$42/28 \div 14/14 = 3/2$$

Hence, the simplest form of  $42/28$  is  $3/2$ .

(iii)  $12/52$

We know that

Factors of 12 are

1, 2, 3, 4, 6 and 12

Factors of 52 are

1, 2, 4, 13, 26 and 52

So the common factors are 1, 2 and 4

We get HCF = 4

By dividing numerator and denominator by 4

$$12/52 \div 4/4 = 3/13$$

Hence, the simplest form of  $12/52$  is  $3/13$ .

(iv)  $40/72$

We know that

Factors of 40 are

1, 2, 4, 5, 8, 10, 20 and 40

Factors of 72 are

1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 36 and 72

So the common factors are 1, 2, 4 and 8

We get HCF = 8

By dividing numerator and denominator by 8

$$40/72 \div 8/8 = 5/9$$

Hence, the simplest form of  $40/72$  is  $5/9$ .

(v)  $80/24$

We know that

Factors of 80 are

1, 2, 4, 5, 8, 10, 16, 20, 40 and 80

Factors of 24 are

1, 2, 3, 4, 6, 8, 12 and 24

So the common factors are 1, 2, 4 and 8

We get HCF = 8

By dividing numerator and denominator by 8

$$80/24 \div 8/8 = 10/3$$

Hence, the simplest form of  $80/24$  is  $10/3$ .

(vi)  $84/56$

We know that

Factors of 84 are

1, 2, 3, 4, 6, 7, 12, 14, 21, 28, 42 and 84

Factors of 56 are

1, 2, 4, 7, 8, 14, 28 and 56

So the common factors are 1, 2, 4, 7, 14 and 28

We get HCF = 28

By dividing numerator and denominator by 28

$$84/56 \div 28/28 = 3/2$$

Hence, the simplest form of  $84/56$  is  $3/2$ .

**2. Simplify each of the following to its lowest term:**

(i)  $75/80$

(ii)  $52/76$

(iii)  $84/98$

(iv)  $68/17$

(v)  $150/50$

(vi)  $162/108$

**Solution:**

(i)  $75/80$

We know that

Factors of 75 are

1, 3, 5, 15, 25 and 75

Factors of 80 are

1, 2, 4, 5, 8, 10, 12, 16, 20, 40 and 80

So the common factors are 1 and 5

We get  $HCF = 5$

By dividing numerator and denominator by 5

$$75/80 \div 5/5 = 15/16$$

Hence, the simplest form of  $75/80$  is  $15/16$ .

(ii)  $52/76$

We know that

Factors of 52 are

1, 2, 4, 13, 26 and 52

Factors of 76 are

1, 2, 4, 19, 38 and 76

So the common factors are 1, 2 and 4

We get  $HCF = 4$

By dividing numerator and denominator by 4

$$52/76 \div 4/4 = 13/19$$

Hence, the simplest form of  $52/76$  is  $13/19$ .

(iii)  $84/98$

We know that

Factors of 84 are

1, 2, 3, 4, 6, 7, 12, 14, 21, 28, 42 and 84

Factors of 98 are

1, 2, 7, 14, 49 and 98

So the common factors are 1, 2, 7 and 14

We get  $HCF = 14$

By dividing numerator and denominator by 14

$$84/98 \div 14/14 = 6/7$$

Hence, the simplest form of  $84/98$  is  $6/7$ .

(iv)  $68/17$

We know that

Factors of 68 are

1, 2, 4, 17, 34 and 68

Factors of 17 are

1 and 17

So the common factors are 1 and 17

We get  $HCF = 17$

By dividing numerator and denominator by 17

$$68/17 \div 17/17 = 4/1$$

Hence, the simplest form of  $68/17$  is  $4/1$ .

(v)  $150/50$

We know that

Factors of 150 are

1, 2, 3, 5, 6, 10, 15, 25, 50 and 150

Factors of 50 are

1, 2, 5, 10, 25 and 50

So the common factors are 1, 2, 5, 10, 25 and 50

We get HCF = 50

By dividing numerator and denominator by 50

$$150/50 \div 50/50 = 3/1$$

Hence, the simplest form of  $150/50$  is  $3/1$ .

(vi)  $162/108$

We know that

Factors of 162 are

1, 2, 3, 6, 9, 18, 27, 54, 81 and 162

Factors of 108 are

1, 2, 3, 4, 6, 9, 12, 18, 27 and 54

So the common factors are 1, 2, 3, 6, 9, 18, 27 and 54

We get HCF = 54

By dividing numerator and denominator by 54

$$162/108 \div 54/54 = 3/2$$

Hence, the simplest form of  $162/108$  is  $3/2$ .

