

TT 3. Possible Solutions

Foundations and Pre-calculus Mathematics 10 (Pearson),

"Exercises" questions 8.c, 9.a, c, 10.c, d, 11.a, c, 12 and 13 on page 140

8.c) $81 = 3 \times 3 \times 3 \times 3$

$$216 = 8 \times 3 \times 3 \times 3$$

$$\text{GCF} = 3 \times 3 \times 3 = 27$$

Alternate method:

Step 1

$$81 = 3 \times 3 \times 3 \times 3$$

$$216 = 2 \times 2 \times 2 \times 3 \times 3 \times 3$$

Step 2

$$81 = 3 \times 3 \times 3 \times 3$$

$$216 = 2 \times 2 \times 2 \times 3 \times 3 \times 3$$

Step 3

$$3 \times 3 \times 3 = 27$$

So, 27 is the largest number that will divide evenly into both 81 and 216 and it is called the greatest common factor.

9. a) $150 = 6 \times 25$

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

$$275 = 25 \times 11$$

$$= 5 \times 5 \times 11$$

$$420 = 10 \times 42$$

$$= 2 \times 5 \times 6 \times 7$$

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

$$\text{GCF} = 5$$

9. c) $126 = 2 \times 63$

$$= 2 \times 3 \times 3 \times 7$$

$$210 = 21 \times 10$$

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

$$546 = 6 \times 91$$

$$= 2 \times 3 \times 7 \times 13$$

$$714 = 7 \times 102$$

$$= 7 \times 2 \times 51$$

$$= 7 \times 2 \times 3 \times 17$$

$$\text{GCF} = 2 \times 3 \times 7$$

$$= 42$$

10. c) $45 = 3 \times 3 \times 5$

$$60 = 2 \times 2 \times 3 \times 5$$

$$\text{LCM} = 3 \times 5 \times 2 \times 2 \times 3$$

$$= 180$$

Alternate method: List the multiples of each number until the same multiple appears in both lists:

- multiples of 45: 45, 90, 135, 180, 225,...

- multiples of 60: 60, 120, 180, ...

The least common multiple of 45 and 60 is 180.

10. d) $38 = 2 \times 19$

$$42 = 2 \times 3 \times 7$$

$$\begin{aligned}\text{LCM} &= 2 \times 3 \times 7 \times 19 \\ &= 798\end{aligned}$$

11. a) $20 = 2 \times 2 \times 5$

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

$$38 = 2 \times 19$$

$$\begin{aligned}\text{LCM} &= 2 \times 2 \times 3 \times 3 \times 5 \times 19 \\ &= 3420\end{aligned}$$

11. c) $12 = 2 \times 2 \times 3$

$$18 = 2 \times 3 \times 3$$

$$25 = 5 \times 5$$

$$30 = 2 \times 3 \times 5$$

$$\begin{aligned}\text{LCM} &= 2 \times 3 \times 5 \times 5 \times 3 \times 2 \\ &= 900\end{aligned}$$

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

$$14 = 2 \times 7$$

$$\text{GCF} = 2$$

$$\text{LCM} = 2 \times 2 \times 3 \times 7$$

When you are determining the GCF, you only take the factors that are common to both. When you are determining the LCM, however, you need to take the common factors as well as the factors unique to each number.

13. $42 = 2 \times 3 \times 7$

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

$$\text{GCF} = 2 \times 3 = 6$$

The greatest number of columns in the array is 6.