# 5-3 Greatest Common Factor (GCF)

G ↓ largest

C ↓ have alike (share)

F ↓ # that goes evenly into another #

**GCF** - the largest of the common factors of 2 or more #s

In elem. school:

14: 1 2 7 14

20: 1 2 4 5 10 20

To find GCF make a double bobsled.

1.)

| 3 | 27 | 45 |
|---|---|---|
| 3 | 9 | 15 |
| | 3 | 5 |

$$3\overline{)45}\quad 15,\ -3\downarrow,\ 15,\ -15,\ 0$$

GCF = 3 · 3 = 9

Still ask yourself: what is the smallest prime # that goes evenly into both.

2, 3, 5, 7, 11, 13...

To find GCF:

Use #s on left of bobsled and multiply them.

2.)

| | | |
|---|---|---|
| 2 | 24 | 32 |
| 2 | 12 | 16 |
| 2 | 6 | 8 |
| | 3 | 4 |

GCF = $2 \cdot 2 \cdot 2 = 8$

3.)

| | | |
|---|---|---|
| | 36 | 54 |

3.)

| | | |
|---|---|---|
| 2 | 36 | 54 |
| 3 | 18 | 27 |
| 3 | 6 | 9 |
| | 2 | 3 |

GCF = $2 \cdot 3 \cdot 3 = 18$

4.) 14 33

GCF = 1

* They don't share any other factors.

5) Triple bobsled

| | | | |
|---|---|---|---|
| 2 | 32 | 48 | 80 |
| 2 | 16 | 24 | 40 |
| 2 | 8 | 12 | 20 |
| 2 | 4 | 6 | 10 |
| | 2 | 3 | 5 |

GCF = 2 · 2 · 2 · 2 = 16

4 · 4

What if:


Must stop even though 2 + 8 have a common factor but 3 does NOT.

6)

| | | |
|---|---|---|
| 2 | 24 | 48 |
| 2 | 12 | 24 |
| 2 | 6 | 12 |
| 3 | 3 | 6 |
| | 1 | 2 |

GCF = 2·2·2·3 = 24

7)

| | | |
|---|---|---|
| 2 | 32 | 48 |
| 2 | 16 | 24 |
| 2 | 8 | 12 |
| 2 | 4 | 6 |
| | 2 | 3 |

GCF = 2·2·2·2 = 16

8)

| | | | |
|---|---|---|---|
| 2 | 6 | 18 | 42 |
| 3 | 3 | 9 | 21 |
| | 1 | 3 | 7 |

GCF = 2·3 = 6

9)

| | | |
|---|---|---|
| 1 | 16 | 35 |

GCF = 1