

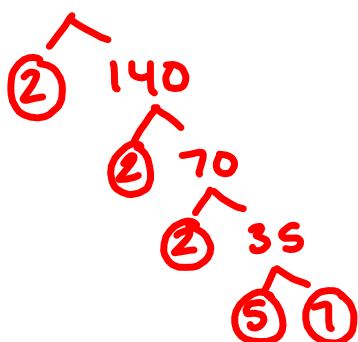
Warm Up

List the product of primes for

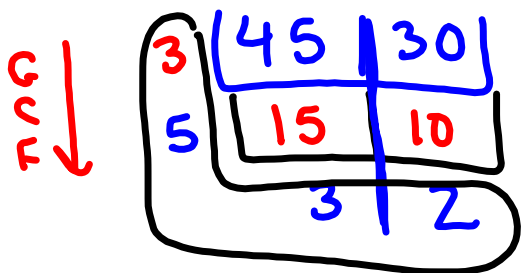
280

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

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



What is the least common multiple of 45 and 30 ?



$$LCM(45, 30) = 3 \times 5 \times 3 \times 2$$

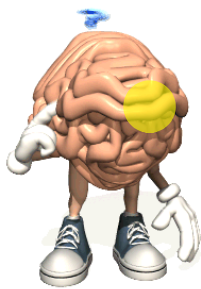
$$= 90$$

$$GCF(45, 30) = 3 \times 5$$

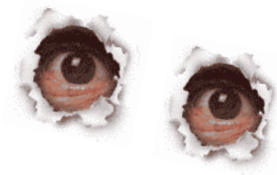
$$= 15$$

Chapter 3 Day 3_Factors & Products _Common Factors M.O'Keefe.notebook March 09, 2020

2	3	5	7	11	13	17	19	23	29	31	37	41	43	47	53	59	61	67	71
73	79	83	89	97	101	103	107	109	113	127	131	137	139	149	151	157	163	167	173
179	181	191	193	197	199	211	223	227	229	233	239	241	251	257	263	269	271	277	281
283	293	307	311	313	317	331	337	347	349	353	359	367	373	379	383	389	397	401	409
419	421	431	433	439	443	449	457	461	463	467	479	487	491	499	503	509	521	523	541
547	557	563	569	571	577	587	593	599	601	607	613	617	619	631	641	643	647	653	659
661	673	677	683	691	701	709	719	727	733	739	743	751	757	761	769	773	787	797	809
811	821	823	827	829	839	853	857	859	863	877	881	883	887	907	911	919	929	937	941
947	953	967	971	977	983	991	997	1009	1013	1019	1021	1031	1033	1039	1049	1051	1061	1063	1069
1087	1091	1093	1097	1103	1109	1117	1123	1129	1151	1153	1163	1171	1181	1187	1193	1201	1213	1217	1223
1229	1231	1237	1249	1259	1277	1279	1283	1289	1291	1297	1301	1303	1307	1319	1321	1327	1361	1367	1373
1381	1399	1409	1423	1427	1429	1433	1439	1447	1451	1453	1459	1471	1481	1483	1487	1489	1493	1499	1511
1523	1531	1543	1549	1553	1559	1567	1571	1579	1583	1597	1601	1607	1609	1613	1619	1621	1627	1637	1657
1663	1667	1669	1693	1697	1699	1709	1721	1723	1733	1741	1747	1753	1759	1777	1783	1787	1789	1801	1811
1823	1831	1847	1861	1867	1871	1873	1877	1879	1889	1901	1907	1913	1931	1933	1949	1951	1973	1979	1987
1993	1997	1999	2003	2011	2017	2027	2029	2039	2053	2063	2069	2081	2083	2087	2089	2099	2111	2113	2129



Warm Up



1. Use the least common multiple to help determine each answer.

a) $\frac{8}{3} + \frac{5}{11}$

b) $\frac{13}{5} - \frac{4}{7}$

c) $\frac{1}{6} + \frac{1}{4}$

Exercises page 140

Homework Solutions

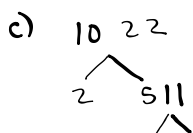
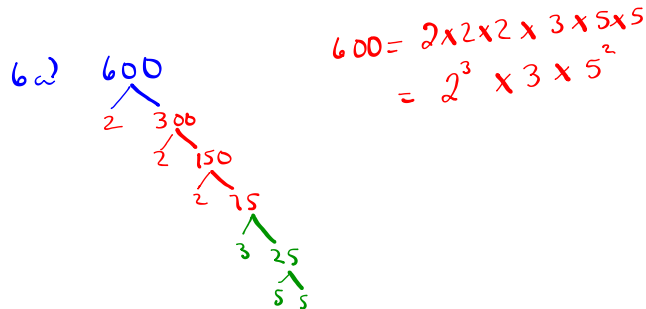
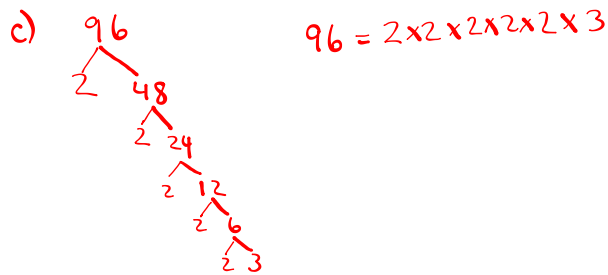
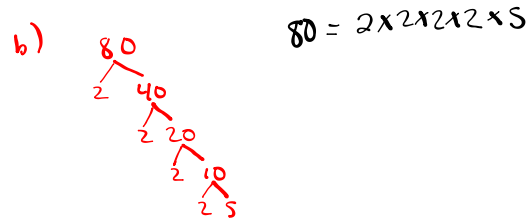
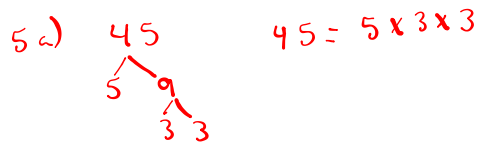
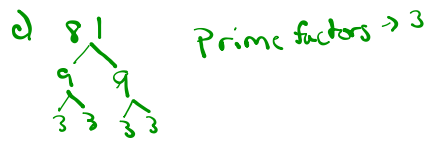
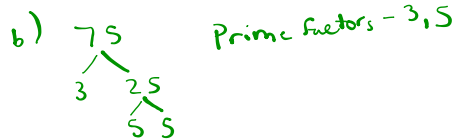
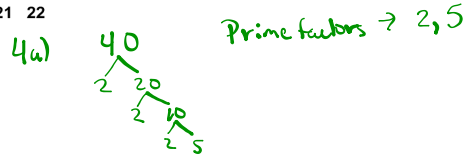
A 3 ^{a,b,c} 4 ^{a,b,c} 5 ^{a,b,c}

B ^{a,b,c} 6 7 8 ^{a,c} 9 ^{a,c} 10 ^{a,c} 11 12 13

14 ^{a,d} 15 ^{a,d} 16 ^{a,d} 17 18 20

C

21 22



Exercises page 140

A
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
20
C
21
22

$$8d) \begin{array}{r|l} 3 & 81 \\ \hline 3 & 27 \\ 3 & 9 \\ 3 & 3 \end{array} \quad \begin{array}{r|l} & 216 \\ \hline & 72 \\ & 24 \\ & 8 \end{array}$$

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

$$8d) \begin{array}{r|l} 2 & 180 \\ \hline 2 & 90 \\ & 45 \end{array} \quad \begin{array}{r|l} & 224 \\ \hline & 112 \\ & 56 \end{array}$$

$$GCF = 2 \times 2 = 4$$

$$f) \begin{array}{r|l} 2 & 220 \\ \hline 2 & 110 \\ 5 & 22 \end{array} \quad \begin{array}{r|l} & 860 \\ \hline & 430 \\ & 172 \end{array}$$

$$GCF = 2 \times 2 \times 5 = 20$$

9a) 150, 275, 420

1x150	1x275	1x420
2x75	5x55	2x210
3x50	11x25	3x140
5x30		4x105
6x25		5x84
10x15		6x70
		7x60
		10x42
		12x35
		15x28
		20x21

$$GCF = 5$$

$$5 \begin{array}{r|l} & 150 \\ \hline 30 & 275 \\ & 420 \end{array}$$

$$9d) \begin{array}{r|l} 2 & 126 \\ \hline 3 & 63 \\ 7 & 21 \end{array} \quad \begin{array}{r|l} & 240 \\ \hline & 105 \\ & 35 \end{array} \quad \begin{array}{r|l} & 546 \\ \hline & 273 \\ & 119 \end{array} \quad \begin{array}{r|l} & 714 \\ \hline & 357 \\ & 17 \end{array}$$

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

$$13) \begin{array}{r|l} 2 & 42 \\ \hline 3 & 21 \\ 7 & 7 \end{array} \quad \begin{array}{r|l} & 36 \\ \hline & 18 \\ & 6 \end{array}$$

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

$$15a) 5 \begin{array}{r|l} & 185 \\ \hline 37 & 325 \end{array}$$

$$GCF = 5$$

So divide both numerator and denominator by 5

$$\frac{185}{325} = \frac{37}{65}$$

$$d) \begin{array}{r|l} 2 & 840 \\ \hline 2 & 420 \\ 5 & 84 \end{array} \quad \begin{array}{r|l} & 1220 \\ \hline & 610 \\ & 305 \end{array}$$

$$GCF = 2 \times 2 \times 5 = 20$$

$$\frac{840}{20} = 42, \quad \frac{1220}{20} = 61$$

$$16a) \frac{9}{14} + \frac{11}{16}$$

$$2 \begin{array}{r|l} & 14 \\ \hline 7 & 7 \end{array} \quad \begin{array}{r|l} & 16 \\ \hline 8 & 8 \end{array}$$

$$LCM = 2 \times 7 \times 8 = 112$$

$$\frac{9 \times 8}{14 \times 8} + \frac{11 \times 7}{16 \times 7}$$

$$\frac{72}{112} + \frac{77}{112}$$

$$\frac{149}{112}$$

$$d) \frac{9x^2}{10x^2} + \frac{5x^2}{14x^2} + \frac{4}{21}$$

$$\frac{63}{70} + \frac{25}{70} + \frac{4}{21}$$

$$\frac{38 \times 3}{70 \times 3} + \frac{4 \times 10}{21 \times 10}$$

$$\frac{264}{210} + \frac{40}{210}$$

$$\frac{304}{210} \text{ Reduce } \frac{152}{105}$$

$$2 \begin{array}{r|l} & 10 \\ \hline 5 & 5 \end{array} \quad \begin{array}{r|l} & 14 \\ \hline 7 & 7 \end{array}$$

$$LCM = 70$$

$$7 \begin{array}{r|l} & 10 \\ \hline 10 & 10 \end{array} \quad \begin{array}{r|l} & 21 \\ \hline 21 & 21 \end{array}$$

Just another Method

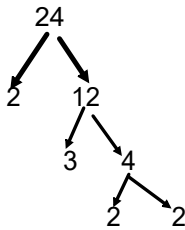
Using Prime Factors to Solve GCF of Numbers

Steps:

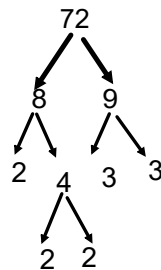
- 1) Find the prime factors of each number
- 2) Compare the prime factors of each number
- 3) Circle the prime factors that each number has in common
- 4) Multiply common prime factors together to get GCF of #'s

Example:

Find the GCF of 24 and 72



$$2 \times 2 \times 2 \times 3$$



$$2 \times 2 \times 2 \times 3 \times 3$$

Factoring

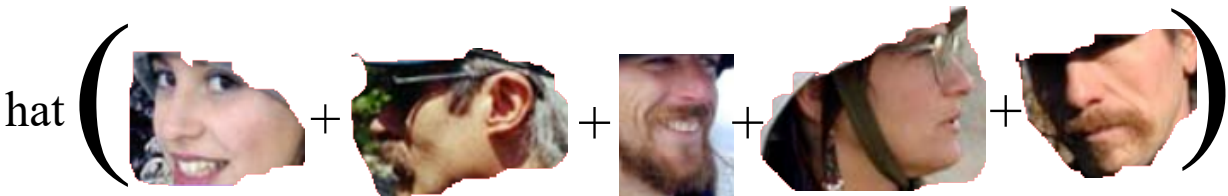
There are 5 different kinds of Factoring:

- **Greatest common factor (GCF)**
- **Factor by grouping**
- **Simple Trinomials (Factor by Inspection)**
- **Hard Trinomials (Factor by Decomposition)**
- **Special Factors**
 - **Difference of Squares**
 - **Perfect Square Trinomials**

Notice Anything?



They all have something in
common!



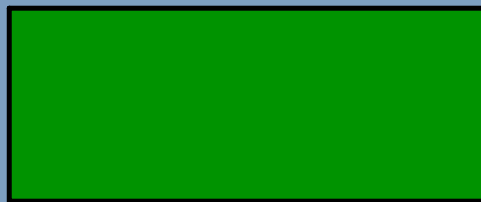
What do these 3 items have in common?



Eggs,

Eyes,

**A Load of
Laundry**



What do these 3 items have in common?



A Locksmith

A Piano

Florida,



What do these 3 items have in common?



Frosty the
snowman



Wicked
witches of
the west



Ice Cream



What do these 3 items have in common?



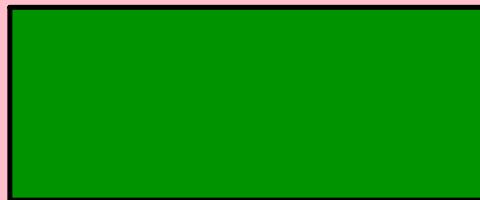
A Light



Blue Jeans



Memories



What do these 3 items have in common?

Hard

Salt

Distilled

Common Factoring



for the Greatest Common Factor
GCF

Review of GCF

Find the GCF for the following pairs of numbers:

1) 6 and 12

2) 6 and 21

3) 30 and 21

4) 144 and 126

144 :

126 :

Anything in common?

$$20x + 15y - 30z$$

$$5(4x + 3y - 6z)$$

Common Factoring



Look for a
common
variable.

Anything Common?

$$3x + 10xy - 7xyz$$

$$x(3 + 10y - 7yz)$$

Common Factor!

$$1. a^5 c^6 z^{11} + a^9 c^{10} z^{13}$$

$$a^5 c^6 z^{11} \left(\underline{1} + \underline{a^4 c^4 z^2} \right)$$

$$2. 25x^7 - 15x^5$$

$$25 \underline{\text{xxxxxxx}} - 15 \underline{\text{xxxxx}}$$

$$5x^5 (5x^2 - 3)$$

$$3) 42x^7y^3 - 12x^9y^1$$

$$6x^7y^1 (\underline{7y^2} - \underline{2x^2})$$

$$x^2 c^7 + x^3 c^2$$
$$x^2 c^2 \left(\underline{c^5} + \underline{x^1} \right)$$

$$3. \quad \underline{12x^7} \underline{y^8} - \underline{24x^9} \underline{y^4}$$

$$12x^7y^4 \left(\underline{y^4} - \underline{2x^2} \right)$$

$$\underline{a^3 b^4 c^7} - 3 \underline{a^4 b} + \underline{a^{10} b^6 c^5}$$

$$a^3 b^1 \left(\underline{b^3 c^7} - \underline{3a} + \underline{a^7 b^5 c^5} \right)$$

$$\text{Ex)} \quad 5x^3 y^7 z^3 + 15x^7 y^6 z^2 + 10x^2 y^5$$

$$5x^2 y^5 \left(\underline{1xy^2 z^3} + \underline{3x^5 y^1 z^2} + \underline{2} \right)$$

How do I factor out the GCF?

Step 1: Identify the GCF of the polynomial

$$14y^5 - 4y^3 + 2y$$


What is the largest monomial that we can factor out?

The GCF is..... $2y$

Step 2: Divide the GCF out of every term of the polynomial

$$14y^5 - 4y^3 + 2y$$

Factor out our GCF
 $2y$


$$2y(7y^4 - 2y^2 + 1)$$

3.3 Common Factors of a Polynomial

Exercises Page 155

A

4 5 6a

B

7 8 9 10 11 12 13 14

15_b 16 17 18 19 20

C

21 22

Reflect

Pg 155

69
16
14 → collect like terms
first $7x + 2x - 3 - 2$
15bizi $9x - 5$
16