Numbers

Prime Factors, Highest Common Factors, and Lowest Common Multiples - Memo

1. Find all the prime factors of the following numbers using the ladder method:

a)

179	179
1	

b)

276	2
138	2
69	3
23	23
1	

c)

186	2
93	3
31	31
1	

d)

147	3
49	7
7	7
1	

e)

81	3
27	3
9	3
3	3
1	

f)

171	3
57	3
19	19
1	

g)

64	2
32	2
16	2
8	2
4	2
2	2
1	

h)

102	2
51	3
17	17
1	

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i)

22	2
11	11
1	

j)

214	2
107	107
1	

k)

264	2
132	2
66	2
33	3
11	11
1	

l)

159	3
53	53
1	

m)

185	5
37	37
1	

n)

153	3
51	3
17	17
1	

o)

162	2
81	3
27	3
9	3
3	3
1	

p)

256	2
128	2
64	2
32	2
16	2
8	2
4	2
2	2
1	

q)

268	2
134	2
67	67
1	

r)

127	127
1	

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s)

161	7
23	23
1	

t)

300	2
150	2
75	5
15	5
3	3
1	

u)

249	3
83	83
1	

2. Find all the prime factors of the following numbers using the tree/branch method:

a) 291 → 3, 97

b) 60 → 5, 12 → 2, 6 → 2, 3

c) 90 → 3, 30 → 3, 10 → 5, 2

d) 174 → 2, 87 → 3, 29

e) 81 → 3, 27 → 3, 9 → 3, 3

f) 97 → 1, 97

g) 200 → 2, 100 → 2, 50 → 2, 25 → 5, 5

h) 16 → 2, 8 → 2, 4 → 2, 2

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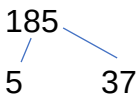
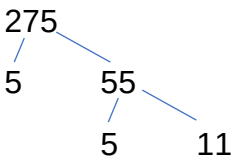
i)



j)



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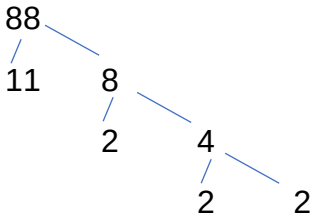

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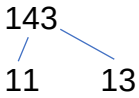

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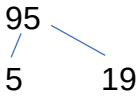

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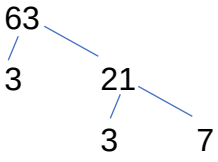

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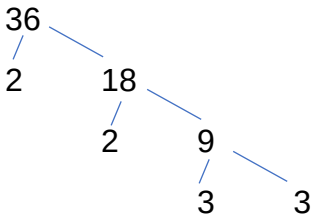

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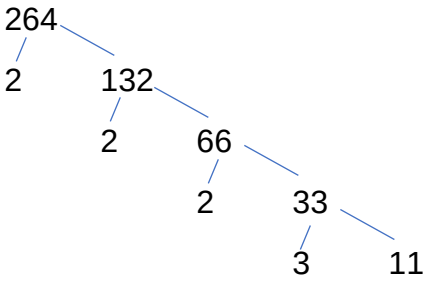
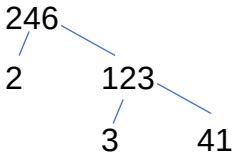


q)



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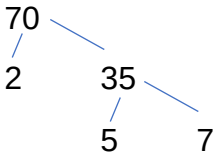

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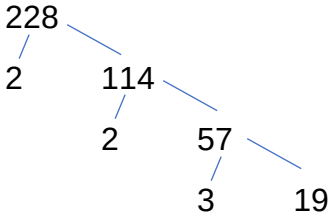

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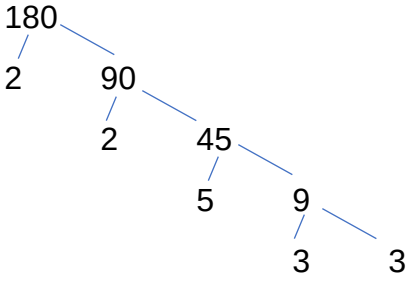

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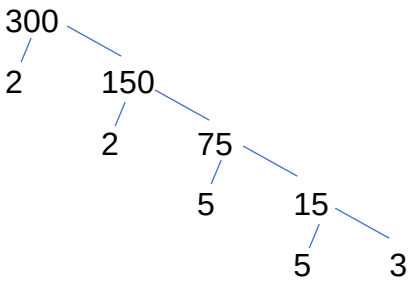
u)



3. Find the highest common factor (or greatest common divisor) for each of the pairs of numbers.

a) 171 and 152

171 = 3 x 3 x 19

152 = 2 x 2 x 2 x 19

HCF = 19

b) 23 and 42

23 = 23 x 1

42 = 2 x 3 x 7

HCF = 1

c) 105 and 77

105 = 3 x 5 x 7

77 = 7 x 11

HCF = 7

d) 221 and 247

221 = 13 x 17

247 = 13 x 19

HCF = 13

e) 96 and 224

96 = 2 x 2 x 2 x 2 x 2 x 3

224 = 2 x 2 x 2 x 2 x 2 x 7

HCF = 2 x 2 x 2 x 2 x 2 = 32

f) 114 and 285

114 = 2 x 3 x 19

285 = 3 x 5 x 19

HCF = 3 x 19 = 57

g) 44 and 121

44 = 2 x 2 x 11

121 = 11 x 11

HCF = 11

h) 278 and 780

278 = 2 x 139

780 = 2 x 2 x 3 x 5 x 13

HCF = 2

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i) 110 and 88

110 = 2 x 5 x 11

88 = 2 x 2 x 2 x 11

HCF = 2 x 11 = 22

j) 216 and 36

216 = 2 x 2 x 2 x 3 x 3 x 3

36 = 2 x 2 x 3 x 3

HCF = 2 x 2 x 3 x 3 = 36

k) 75 and 90

75 = 3 x 5 x 5

90 = 2 x 3 x 3 x 5

HCF = 3 x 5 = 15

l) 65 and 104

65 = 5 x 13

104 = 2 x 2 x 2 x 13

HCF = 13

m) 252 and 210

252 = 2 x 2 x 3 x 3 x 7

210 = 2 x 3 x 5 x 7

HCF = 2 x 3 x 7 = 42

n) 175 and 200

175 = 5 x 5 x 7

200 = 2 x 2 x 2 x 5 x 5

HCF = 5 x 5 = 25

o) 172 and 258

172 = 2 x 2 x 43

258 = 2 x 3 x 43

HCF = 2 x 43 = 86

4. Find the highest common factor (or greatest common divisor) for each of these sets of numbers

a) 217, 147 and 126

217 = 7 x 31

147 = 3 x 7 x 7

126 = 2 x 3 x 3 x 7

HCF = 7

b) 195, 390 and 520

195 = 3 x 5 x 13

390 = 2 x 3 x 5 x 13

520 = 2 x 2 x 2 x 5 x 13

HCF = 5 x 13 = 65

c) 50, 36 and 100

50 = 2 x 5 x 5

36 = 2 x 2 x 3 x 3

d) 22, 33 and 88

22 = 2 x 11

33 = 3 x 11

100 = 2 x 2 x 5 x 5

HCF = 2

88 = 2 x 2 x 2 x 11

HCF = 11

e) 16, 24 and 48

16 = 2 x 2 x 2 x 2

24 = 2 x 2 x 2 x 3

48 = 2 x 2 x 2 x 2 x 3

HCF = 2 x 2 x 2 = 8

f) 91, 343 and 210

91 = 7 x 13

343 = 7 x 7 x 7

210 = 2 x 3 x 5 x 7

HCF = 7

g) 228, 285 and 399

228 = 2 x 2 x 3 x 19

285 = 3 x 5 x 19

399 = 3 x 7 x 19

HCF = 3 x 19 = 57

h) 60, 144 and 336

60 = 2 x 2 x 3 x 5

144 = 2 x 2 x 2 x 2 x 3 x 3

336 = 2 x 2 x 2 x 2 x 3 x 7

HCF = 2 x 2 x 3 = 12

i) 255, 102 and 306

255 = 3 x 5 x 17

102 = 2 x 3 x 17

306 = 2 x 3 x 3 x 17

HCF = 3 x 17 = 51

j) 290, 580 and 145

290 = 2 x 5 x 29

580 = 2 x 2 x 5 x 29

145 = 5 x 29

HCF = 5 x 29 = 145

5. Find the lowest common multiple for each of these pairs of numbers

a) 171 and 152

171 = 3 x 3 x 19

152 = 2 x 2 x 2 x 19

LCM = 2 x 2 x 2 x 3 x 3 x 19

LCM = 1 368

b) 23 and 42

23 = 23 x 1

42 = 2 x 3 x 7

LCM = 2 x 3 x 7 x 23

LCM = 966

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c) 105 and 77

105 = 3 x 5 x 7

77 = 7 x 11

LCM = 3 x 5 x 7 x 11

LCM = 1 155

d) 221 and 247

221 = 13 x 17

247 = 13 x 19

LCM = 13 x 17 x 19

LCM = 4 199

e) 96 and 224

96 = 2 x 2 x 2 x 2 x 2 x 3

224 = 2 x 2 x 2 x 2 x 2 x 7

LCM = 2 x 2 x 2 x 2 x 2 x 3 x 7

LCM = 672

f) 114 and 285

114 = 2 x 3 x 19

285 = 3 x 5 x 19

LCM = 2 x 3 x 5 x 19

LCM = 570

g) 44 and 121

44 = 2 x 2 x 11

121 = 11 x 11

LCM = 2 x 2 x 11 x 11

LCM = 484

h) 278 and 780

278 = 2 x 139

780 = 2 x 2 x 3 x 5 x 13

LCM = 2 x 2 x 3 x 5 x 13 x 139

LCM = 108 420

i) 110 and 88

110 = 2 x 5 x 11

88 = 2 x 2 x 2 x 11

LCM = 2 x 2 x 2 x 5 x 11

LCM = 440

j) 216 and 36

216 = 2 x 2 x 2 x 3 x 3 x 3

36 = 2 x 2 x 3 x 3

LCM = 2 x 2 x 2 x 3 x 3 x 3

LCM = 216

k) 75 and 90

75 = 3 x 5 x 5

90 = 2 x 3 x 3 x 5

LCM = 2 x 3 x 3 x 5 x 5

LCM = 450

l) 65 and 104

65 = 5 x 13

104 = 2 x 2 x 2 x 13

LCM = 2 x 2 x 2 x 5 x 13

LCM = 520

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m) 252 and 210

252 = 2 x 2 x 3 x 3 x 7

210 = 2 x 3 x 5 x 7

LCM = 2 x 2 x 3 x 3 x 5 x 7

LCM = 1 260

n) 175 and 200

175 = 5 x 5 x 7

200 = 2 x 2 x 2 x 5 x 5

LCM = 2 x 2 x 2 x 5 x 5 x 7

LCM = 1 400

o) 172 and 258

172 = 2 x 2 x 43

258 = 2 x 3 x 43

LCM = 2 x 2 x 3 x 43

LCM = 516

6. Find the lowest common multiple for each of these sets of numbers

a) 217, 147 and 126

217 = 7 x 31

147 = 3 x 7 x 7

126 = 2 x 3 x 3 x 7

LCM = 2 x 3 x 3 x 7 x 7 x 31

LCM = 27 342

b) 195, 390 and 520

195 = 3 x 5 x 13

390 = 2 x 3 x 5 x 13

520 = 2 x 2 x 2 x 5 x 13

LCM = 2 x 2 x 2 x 3 x 5 x 13

LCM = 1 560

c) 50, 36 and 100

50 = 2 x 5 x 5

36 = 2 x 2 x 3 x 3

100 = 2 x 2 x 5 x 5

LCM = 2 x 2 x 3 x 3 x 5 x 5

LCM = 900

d) 22, 33 and 88

22 = 2 x 11

33 = 3 x 11

88 = 2 x 2 x 2 x 11

LCM = 2 x 2 x 2 x 3 x 11

LCM = 264

e) 16, 24 and 48

16 = 2 x 2 x 2 x 2

24 = 2 x 2 x 2 x 3

f) 91, 343 and 210

91 = 7 x 13

343 = 7 x 7 x 7

48 = 2 x 2 x 2 x 2 x 3

LCM = 2 x 2 x 2 x 2 x 3

LCM = 48

210 = 2 x 3 x 5 x 7

LCM = 2 x 3 x 5 x 7 x 7 x 7 x 13

LCM = 133 770

g) 228, 285 and 399

228 = 2 x 2 x 3 x 19

285 = 3 x 5 x 19

399 = 3 x 7 x 19

LCM = 2 x 2 x 3 x 5 x 7 x 19

LCM = 7 980

h) 60, 144 and 336

60 = 2 x 2 x 3 x 5

144 = 2 x 2 x 2 x 2 x 3 x 3

336 = 2 x 2 x 2 x 2 x 3 x 7

LCM = 2 x 2 x 2 x 2 x 3 x 3 x 5 x 7

LCM = 5 040

i) 255, 102 and 306

255 = 3 x 5 x 17

102 = 2 x 3 x 17

306 = 2 x 3 x 3 x 17

LCM = 2 x 3 x 3 x 5 x 17

LCM = 1 530

j) 290, 580 and 145

290 = 2 x 5 x 29

580 = 2 x 2 x 5 x 29

145 = 5 x 29

LCM = 2 x 2 x 5 x 29

LCM = 580

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