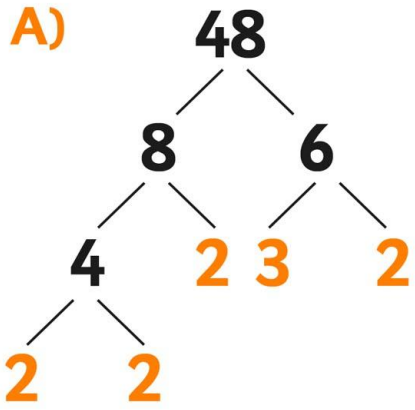
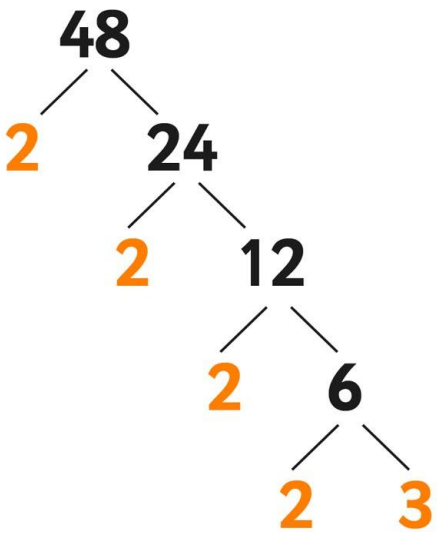
Prime Factors

LO: I can find prime factors

A)



B)



Using one of these techniques, find the prime factors of the following numbers:

18, 20, 24, 27, 32, 36, 40, 42, 45, 52, 60, 70, 72, 80, 84, 88, 90, 96, 98, 99

What about these harder ones?

105, 111, 116, 126, 133, 151, 154, 156, 165, 195, 207, 210, 297, 343, 351

Or these even larger numbers:

377, 390, 429, 448, 462, 527, 561, 575, 608, 672, 689, 715, 819, 891, 973

Show your Factor Trees in your book.

Prime Factors

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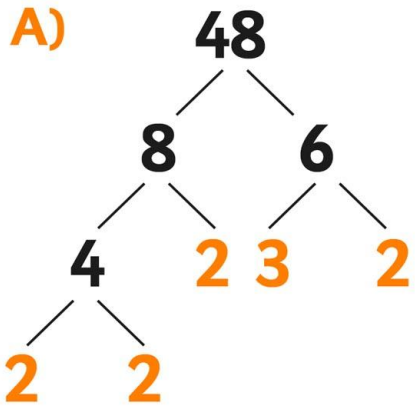
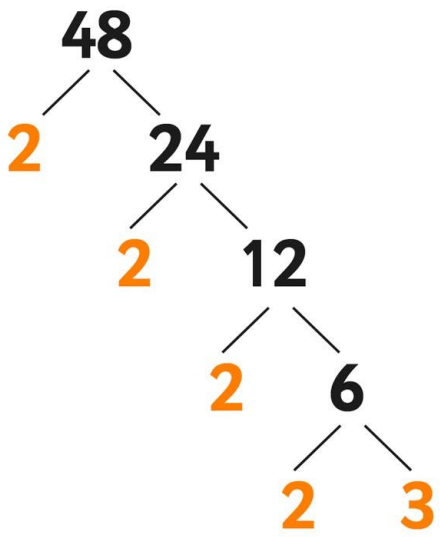
The Factor Tree Method for finding prime factors is as follows:

A)



B)



Using one of these techniques, find the prime factors of the following numbers:

18, 20, 24, 27, 32, 36,

40, 42, 45, 52, 60, 70,

72, 80, 84, 88, 90, 96

Show your Factor Trees in your book.

Prime Numbers

A natural number greater than 1 with no divisors other than 1 and itself.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Remember these facts about prime numbers!

There are no even numbers except 2.

There are no prime numbers ending in 5, except 5.

The digits can't add up to 3 except 3 (digital root).

Prime Factors – Answers

Note all answers can be given in either format. Just one format is given here.

$18 = 2 \times 3^2$

$20 = 2^2 \times 5$

$24 = 2^3 \times 3$

$27 = 3^3$

$32 = 2^5$

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

$40 = 2^3 \times 5$

$45 = 3^2 \times 5$

$52 = 2^2 \times 13$

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

$70 = 2 \times 5 \times 7$

$72 = 2^3 \times 3^2$

$80 = 2^4 \times 5$

$84 = 2^2 \times 3 \times 7$

$90 = 2 \times 3^2 \times 5$

$96 = 2^5 \times 3$

$98 = 2 \times 7^2$

$99 = 3^2 \times 11$

$105 = 3 \times 5 \times 7$

$111 = 3 \times 37$

$116 = 2^2 \times 29$

$126 = 2 \times 3^2 \times 7$

$133 = 7 \times 19$

$151 = 151$ (prime)

$154 = 2 \times 7 \times 11$

$156 = 2^2 \times 3 \times 13$

$165 = 3 \times 5 \times 11$

$195 = 3 \times 5 \times 13$

$207 = 3^2 \times 23$

$297 = 3^3 \times 11$

$343 = 7^3$

$351 = 3^3 \times 13$

$377 = 13 \times 29$

$390 = 2 \times 3 \times 5 \times 13$

$429 = 3 \times 11 \times 13$

$448 = 2^6 \times 7$

$462 = 2 \times 3 \times 7 \times 11$

$527 = 17 \times 31$

$561 = 3 \times 11 \times 17$

$575 = 5^2 \times 23$

$608 = 2^5 \times 19$

$672 = 2^5 \times 3 \times 7$

$689 = 13 \times 53$

$715 = 5 \times 11 \times 13$

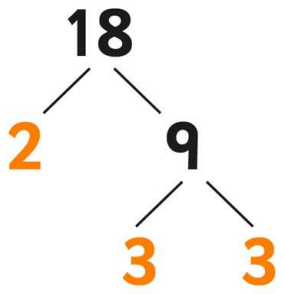
$819 = 3^2 \times 7 \times 13$

$891 = 3^4 \times 11$

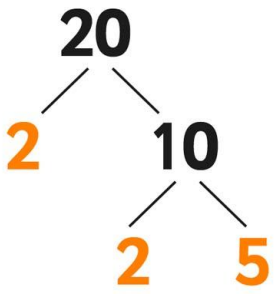
$973 = 7 \times 139$

Note that there are a number of websites that will give the prime factors for any number:

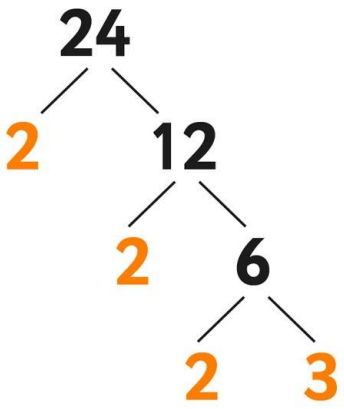
Prime Factors – Answers



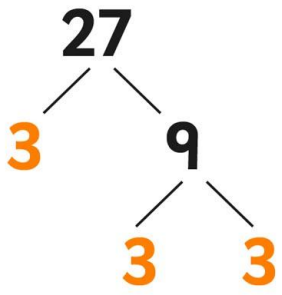
2 x 3 x 3 = 18



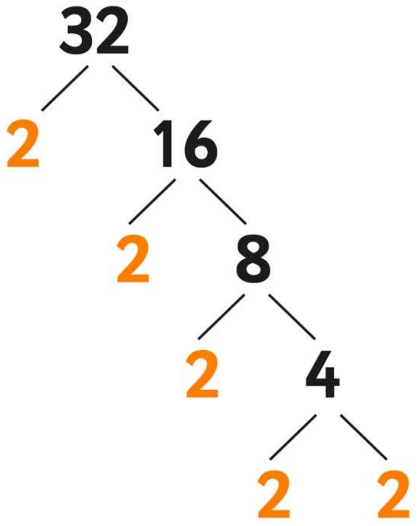
2 x 2 x 5 = 20



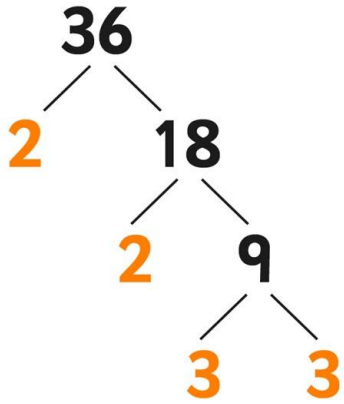
2 x 2 x 2 x 3 = 24



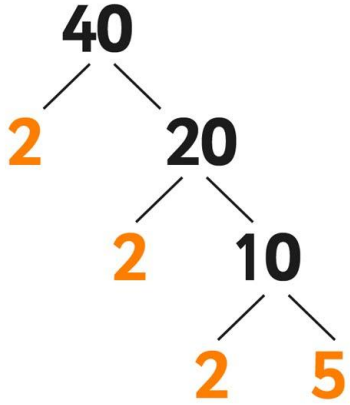
3 x 3 x 3 = 27



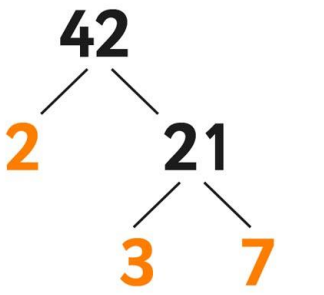
2 x 2 x 2 x 2 x 2 = 32



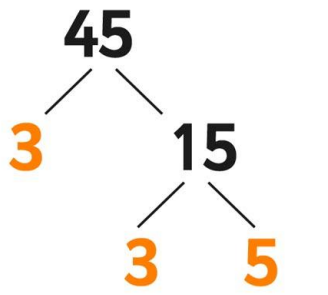
2 x 2 x 3 x 3 = 36



2 x 2 x 2 x 5 = 40

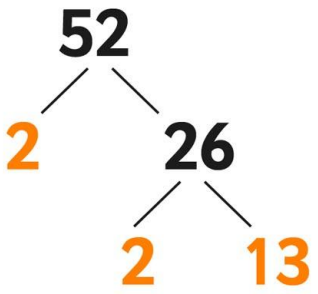


2 x 3 x 7 = 42

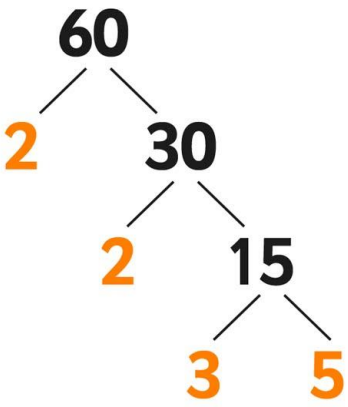


3 x 3 x 5 = 45

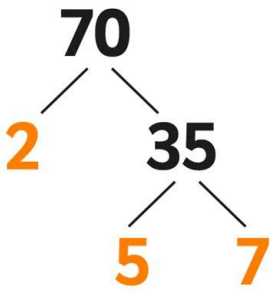
Prime Factors – Answers



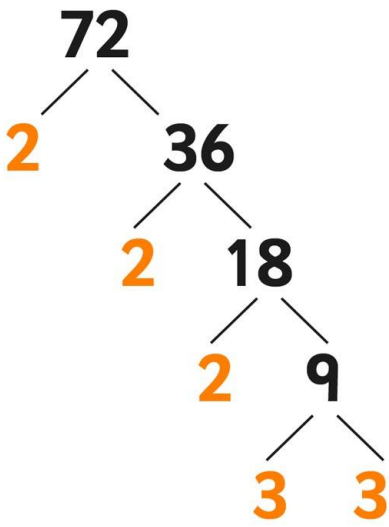
2 x 2 x 13 = 52



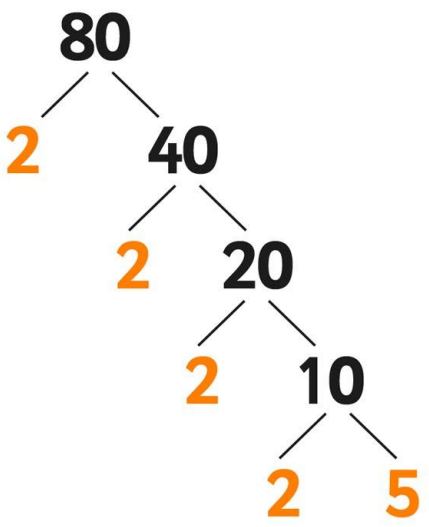
2 x 2 x 3 x 5 = 60



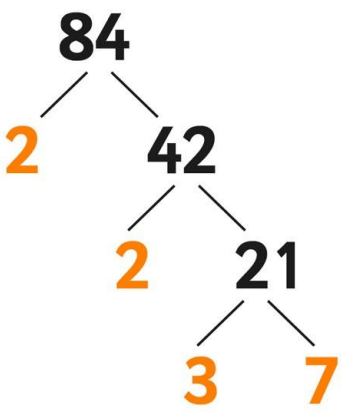
2 x 5 x 7 = 70



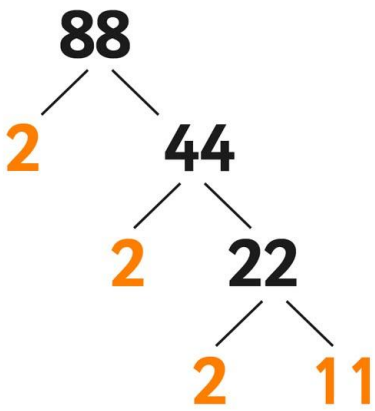
2 x 2 x 2 x 3 x 3 = 72



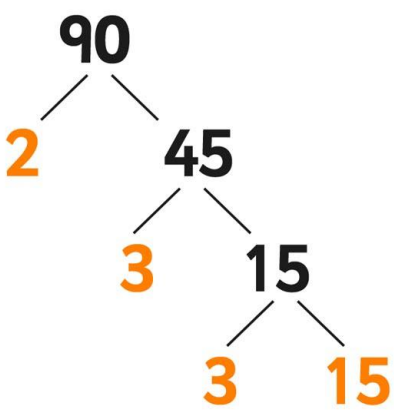
2 x 2 x 2 x 2 x 5 = 80



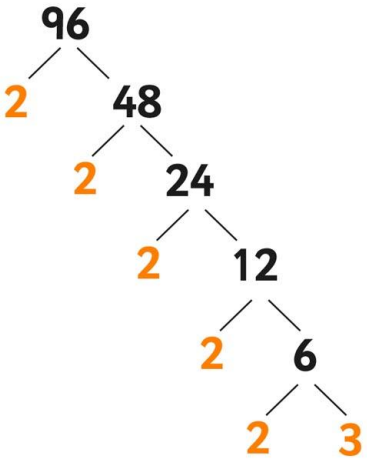
2 x 2 x 3 x 7 = 84



2 x 2 x 2 x 11 = 88



2 x 3 x 3 x 5 = 90



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