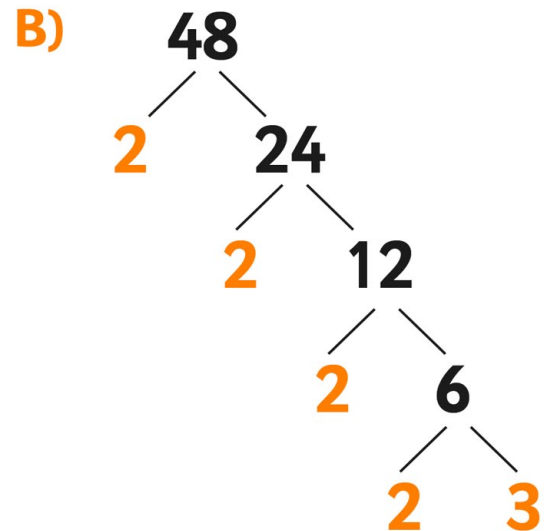
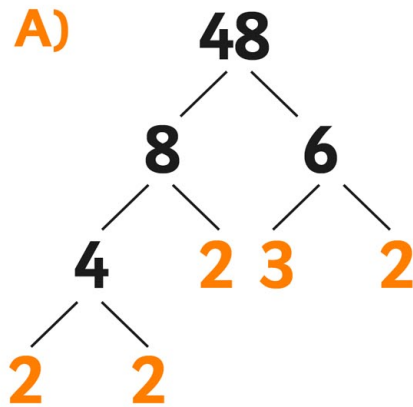


Prime Factors

LO: I can find prime factors



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:

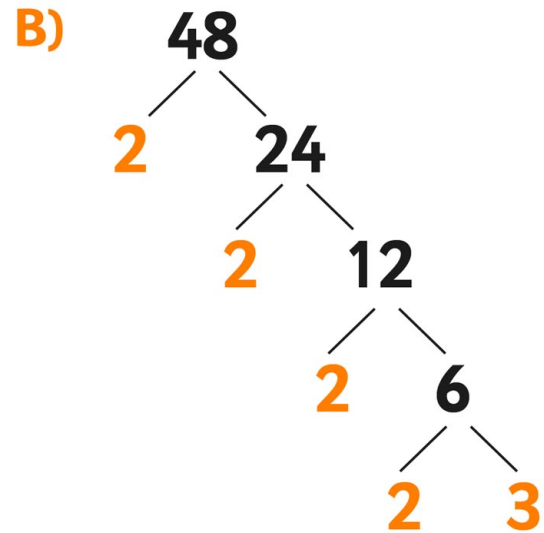
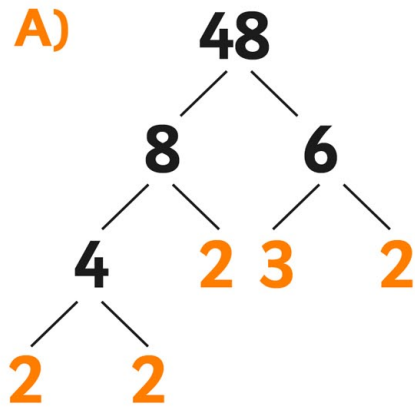
377, 390, 429, 448, 462, 527, 561, 575, 608, 672, 689, 715, 819, 891, 973

Show your Factor Trees in your book.

Prime Factors

LO: I can find prime factors

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



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.

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

$$20 = 2^2 \times 5$$

$$24 = 2^3 \times 3$$

$$27 = 3^3$$

$$32 = 2^5$$

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

$$40 = 2^3 \times 5$$

$$45 = 3^2 \times 5$$

$$52 = 2^2 \times 13$$

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

$$70 = 2 \times 5 \times 7$$

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

$$80 = 2^4 \times 5$$

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

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

$$96 = 2^5 \times 3$$

$$98 = 2 \times 7^2$$

$$99 = 3^2 \times 11$$

$$105 = 3 \times 5 \times 7$$

$$111 = 3 \times 37$$

$$116 = 2^2 \times 29$$

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

$$133 = 7 \times 19$$

$$151 = 151 \text{ (prime)}$$

$$154 = 2 \times 7 \times 11$$

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

$$165 = 3 \times 5 \times 11$$

$$195 = 3 \times 5 \times 13$$

$$207 = 3^2 \times 23$$

$$297 = 3^3 \times 11$$

$$343 = 7^3$$

$$351 = 3^3 \times 13$$

$$377 = 13 \times 29$$

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

$$429 = 3 \times 11 \times 13$$

$$448 = 2^6 \times 7$$

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

$$527 = 17 \times 31$$

$$561 = 3 \times 11 \times 17$$

$$575 = 5^2 \times 23$$

$$608 = 2^5 \times 19$$

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

$$689 = 13 \times 53$$

$$715 = 5 \times 11 \times 13$$

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

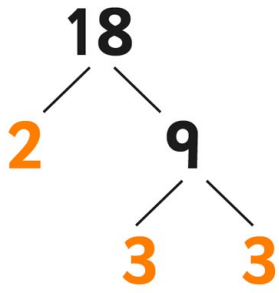
$$891 = 3^4 \times 11$$

$$973 = 7 \times 139$$

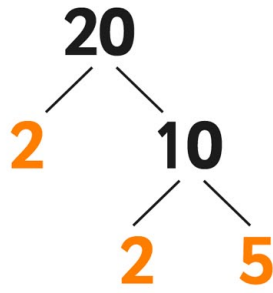
Note that there are a number of websites that will give the prime factors for any number:
e.g. <http://www.calculatorsoup.com/calculators/math/prime-factors.php>

The prime factors for the numbers to 1000 can be found at:
<http://www.sosmath.com/tables/factor/factor.html>

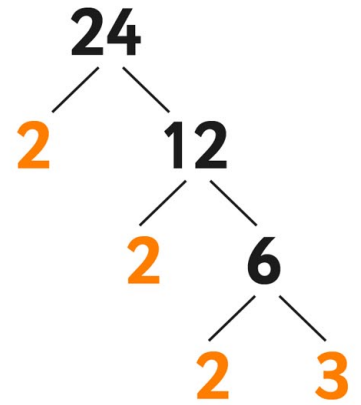
Prime Factors - Answers



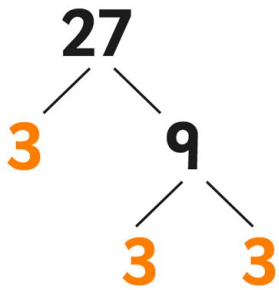
$$2 \times 3 \times 3 = 18$$



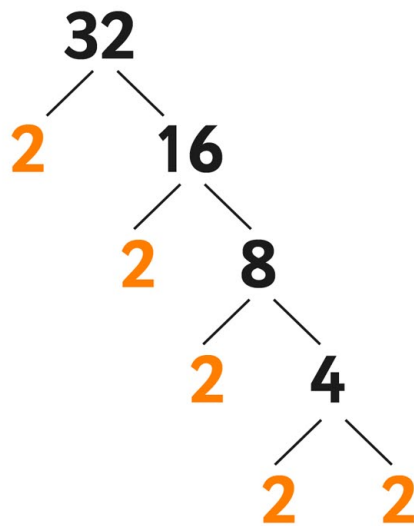
$$2 \times 2 \times 5 = 20$$



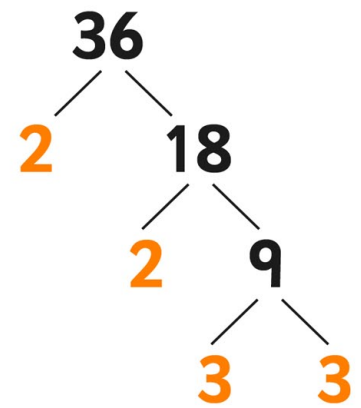
$$2 \times 2 \times 2 \times 3 = 24$$



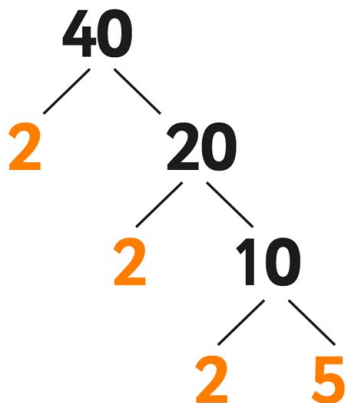
$$3 \times 3 \times 3 = 27$$



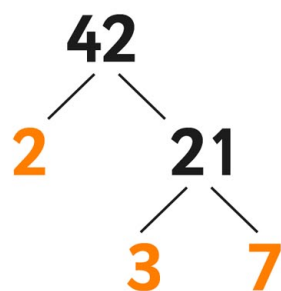
$$2 \times 2 \times 2 \times 2 \times 2 = 32$$



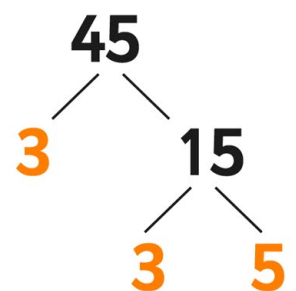
$$2 \times 2 \times 3 \times 3 = 36$$



$$2 \times 2 \times 2 \times 5 = 40$$



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



$$3 \times 3 \times 5 = 45$$

Prime Factors - Answers

