


1. Order of multiplication doesn't matter, so $19 \times 91 = 91 \times 19$ . A) 9      B) 19      C) 91      D) 1991	1. B
2. 1 fortnight = 2 weeks = $2 \times 7$ days = 14 days. A) 4      B) 7      C) 8      D) 14	2. D
3. $\frac{1}{1} + \frac{22}{22} + \frac{333}{333} = 1 + 1 + 1 = 3$ . A) 1      B) 3      C) 6      D) 356	3. B
4. Ice cream pops cost 75¢ each, so 4 pops cost \$3. Two cones, at 95¢ each cost \$1.90. The total cost is \$4.90. A) \$1.20      B) \$3.00      C) \$4.90      D) \$6.00	4. C
5. $100 - 99.4 = 0.6$ , but $99.4 - 99 = 0.4$ ; so 99.4 is closest to 99. A) 99      B) 100      C) 101      D) 102	5. A
6. $\sqrt{1 \times 9 \times 9 \times 1} = \sqrt{81} = 9$ . A) 3      B) 9      C) 81      D) 1991	6. B
7. In one hour, the minute hand of a circular clock moves <i>once</i> around the clock – so the answer is $360^\circ$ . A) $1^\circ$ B) $60^\circ$ C) $120^\circ$ D) $360^\circ$	7. D
8. $1^1 \times 1^2 \times 1^3 \times \dots \times 1^{100} = 1 \times 1 \times 1 \times \dots \times 1 = 1$ . A) 0      B) 1      C) 10      D) 100	8. B
9. If the perimeter of an equilateral triangle is 36, the length of each side is one-third of 36, so the length of each side is 12. A) 6      B) 12      C) 18      D) 36	9. B
10. $3.141 \div 0.9 = 3.49$ (most easily verified on a calculator). A) $\pi \div 0.9$ B) 3.39      C) 3.49      D) 3.59	10. C
11. The sum is $1 + 2 + 4 + 8 + 16 + 32 = 63$ . A) 30      B) 31      C) 32      D) 63	11. D
12. $1000 \times 0.0001 = \text{one thousand} \times \text{one ten-thousandth} = 0.1$ . A) 1      B) 0.1      C) 0.01      D) 0.001	12. B
13. $\frac{5 \times 4 \times 3 \times 2 \times 1}{1 \times 2 \times 3 \times 4 \times 5} = \frac{1 \times 2 \times 3 \times 4 \times 5}{1 \times 2 \times 3 \times 4 \times 5} = 1$ . A) 1      B) 5      C) 24      D) 120	13. A
14. $0.1 + 0.2 + 0.3 + 0.4 = 1.0 = 100\%$ . A) 1%      B) 10%      C) 100%      D) 1000%	14. C
15. There are 100 centimeters in 1 meter, so 1 cm = 0.01 m. A) 100 m      B) 10 m      C) 0.1 m      D) 0.01 m	15. D

16. $\frac{46 \times 4}{23 \times 2} = 2 \times 2 = 4$ . A) 2      B) 4      C) 23      D) 46	16. B
17. \$1 U.S. = 80¢ + 20¢ = \$1 Canadian + $\$(1/4)$ Canadian. A) \$1.25      B) \$1.20      C) 80¢      D) 75¢	17. A
18. Since $10/11 = 30/33$ , the first inequality is false. A) $\frac{10}{11} < \frac{29}{33}$ B) $\frac{4}{5} < \frac{25}{30}$ C) $\frac{3}{7} < \frac{16}{35}$ D) $\frac{7}{13} < \frac{22}{39}$	18. A
19. The average is $(1+2+3+4+5+6+7+8+9+10)/10 = 55/10$ . A) 5      B) 5.5      C) 6      D) 10	19. B
20. $\frac{3}{4}\%$ is slightly less than 1% and equals $(3/4)(1/100)$ . A) 0.75      B) 0.075      C) 0.0075      D) 0.00075	20. C
21. $10 \times 0.1 \times 10 \times 0.1 \times 10 \times 0.1 = 1 \times 1 \times 1 = 1$ . A) 0      B) 0.1      C) 1      D) 10	21. C
22. In a recipe, the ratio of eggs to sugar is 2 eggs per 25 g of sugar. For 175 g of sugar, we need $7 \times 2 = 14$ eggs. A) 12      B) 13      C) 14      D) 15	22. C
23. $(\frac{1}{2} \times \frac{1}{3}) \div (\frac{1}{2} - \frac{1}{3}) = \frac{1}{6} \div \frac{1}{6} = 1$ . A) $\frac{1}{6}$ B) $\frac{1}{5}$ C) $\frac{1}{2}$ D) 1	23. D
24. The sum of the reciprocals of the four whole number factors of 6 is $1/1 + 1/2 + 1/3 + 1/6 = 2$ . A) 2      B) 12      C) 1/12      D) 7/6	24. A
25. $12^3 = (2 \times 2 \times 3)^3 = (2 \times 2 \times 3) \times (2 \times 2 \times 3) \times (2 \times 2 \times 3) = 2^6 \times 3^3$ . A) $2^8 \times 3^3$ B) $2^6 \times 3^3$ C) $2^4 \times 3^2$ D) $2^2 \times 3^2$	25. B
26. The product is $2 \times 3 \times 5 \times 7 = 210$ . [Note: 1 is <i>not</i> prime.] A) 24      B) 30      C) 95      D) 210	26. D
27. $1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 = 36 = 6^2$ . A) 6      B) $\sqrt{6}$ C) $\sqrt{81}$ D) $6^2$	27. D
28. If the time now is 2:17 P.M., then 12 hours from now will be 2:17 A.M., and 1 minute before that will be 2:16 A.M. A) 1:17 A.M.      B) 2:15 A.M.      C) 2:16 A.M.      D) 2:18 A.M.	28. C
29. Work backwards. The reciprocal of 10 is 1/10. The reciprocal of 1/10 is 10. A) 10      B) 100      C) $\frac{1}{10}$ D) $\frac{1}{100}$	29. A

30. If boys:girls is 3:1, there are at least 2 more boys than girls. If 2 boys leave, there <i>cannot</i> be more girls than boys remaining. A) 2:1      B) 1:1      C) 5:2      D) 1:2	30. D
31. The measure of the complement of $\angle A$ is $30^\circ$ , so $m\angle A = 60^\circ$ ; and the measure of the supplement of $\angle A$ is $120^\circ$ . A) $30^\circ$ B) $60^\circ$ C) $120^\circ$ D) $150^\circ$	31. C
32. Since $\frac{2}{3}$ is $\frac{1}{2}$ , $\frac{1}{3}$ is $\frac{1}{4}$ and $\frac{3}{3}$ is $\frac{3}{4}$ ; so the number is $\frac{3}{4}$ . A) $\frac{3}{4}$ B) $\frac{1}{3}$ C) $\frac{3}{2}$ D) 3	32. A
33. If a car is traveling at 60 km per hour, it travels 1 km each minute, so in 72 minutes it travels 72 km. A) 72 km      B) 132 km      C) 144 km      D) 4320 km	33. A
34. The only positive number whose square is its double is 2, since $2^2$ is equal to $2 \times 2 = 4$ . A) 4      B) 3      C) 2      D) 1	34. C
35. If a triangle with base 10 has the same area as a square with side 5, the area of the triangle is $5 \times 5 = 25$ . A triangle with base 10 and altitude 5 has area 25. A) 2.5      B) 5      C) 10      D) 25	35. B
36. Between 1 and 1991, the whole numbers that are multiples of 5 and are even are 10, 20, 30, . . . , 1980, 1990. A) 400      B) 399      C) 398      D) 199	36. D
37. $1\frac{1}{2} \times 1\frac{1}{3} \times 1\frac{1}{4} \times 1\frac{1}{5} \times 1\frac{1}{6} = \frac{3}{2} \times \frac{4}{3} \times \frac{5}{4} \times \frac{6}{5} \times \frac{7}{6} = \frac{7}{2}$ . A) $1\frac{1}{720}$ B) $2\frac{1}{2}$ C) 3      D) $3\frac{1}{2}$	37. D
38. $1991^2$ ends in a "1" and is just less than $2000^2 = 4$ million. A) 2 054 081      B) 3 054 083      C) 3 964 081      D) 4 054 081	38. C
39. The angles of a quadrilateral add up to $360^\circ$ . To be in the ratio 1:2:3:4, they must be $36^\circ$ , $72^\circ$ , $108^\circ$ , and $144^\circ$ . A) $18^\circ$ B) $30^\circ$ C) $36^\circ$ D) $72^\circ$	39. C
40. The ones' digits are 3, 9, 7, 1, 3, 9, 7, 1,.... The 1991st digit is 7. A) 1      B) 3      C) 7      D) 9	40. C

The end of the contest  **7**

## Solutions

### 1990-91 Annual 7th Grade Contest

Tuesday, February 5, 1991

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#### Contest Information

- **Solutions** Turn the page for detailed contest solutions (written in the question boxes) and letter answers (in the answer columns on the right).
- **Scores** When reviewing these questions, remember *this is a contest, not a test*. There is no "passing" or "failing" score. Few students score as high as 30 points (75% correct); students with even half that, 15 points, *deserve commendation!*