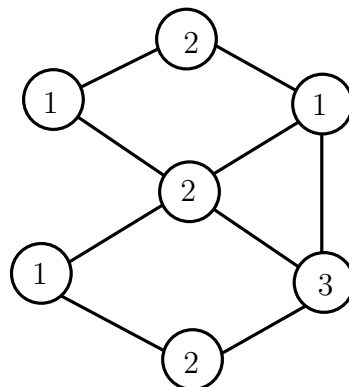


# 2025-2026 Junior Mathematical Olympiad

## Round One Grade 4 SOLUTIONS - 10:00am

1. **Soln:** (C) In each row there are 3 shaded circles. Since there are 4 rows, the number of shaded circles is  $3 \times 4 = 12$ .
2. **Soln:** (C) It is easy to show that  $6202 - 2026 = 4176$ .
3. **Soln:** (B) The value of the 4 revealed coins is  $\$20 + \$10 + \$1 + \$5 = \$36$ . The shortfall is  $\$46 - \$36 = \$10$ . The value of each of the \$? coins is therefore \$5.
4. **Soln:** (D) We want the digits to be increasing from left to right. The largest number is 6220.
5. **Soln:** (B)  $0 \times 2 = 0$  and the result is  $2 + 0 + 6 = 8$ .
6. **Soln:** (E) The order of the symbols must remain. Only  $\square\clubsuit\Delta$  preserves the order.
7. **Soln:** (D) When the first turtle covers  $4 \times 10 = 40$  m, the second turtle will cover  $4 \times 7 = 28$  m. The difference is  $40 - 28 = 12$  m.
8. **Soln:** (E) From the units column we see that  $3x$  has units digit 7. Since  $x$  is a single digit, we deduce that  $x = 9$ . This gives  $3x = 27$ . Hence there is a carry of 2. We can now see from the tens column that  $y = 2 + 1 + 2 + 3 = 8$ . It follows that  $x + y = 9 + 8 = 17$ .
9. **Soln:** (B) The square of 4 and the square of 6 both end in 6 and so only 4 and 6 are eligible.  $44 \times 4 = 176$  and so 4 works.
10. **Soln:** (D) The largest two-digit multiple of 2 is  $x = 98$ . The smallest two-digit multiple of 2 is  $y = 10$ . From this, we get  $x - y = 98 - 10 = 88$ .
11. **Soln:** (D) Three weeks is equivalent to  $3 \times 7 = 21$  days. May ends in  $31 - 12 = 19$  days. The extra two days belong to June.
12. **Soln:** (B) Two paint colors will not do the job and the following configuration does the job



13. **Soln:** (A)  $\frac{4444+5555}{1111+2222} = \frac{9999}{3333} = \frac{9(1111)}{3(1111)} = \frac{9}{3} = 3$ .
14. **Soln:** (B) Observe that  $20+26 = 46$ ,  $20 \div 26 = \frac{10}{13} < 1$ ,  $26-20 = 6$ ,  $20 \times 26 = 520$ , and that  $20^{26}$  is multiplying 20 by itself 26 times which is a very large number.
15. **Soln:** (A) If the left fold is made, the following numbers would be visible 4, 2, 7, 1. If the right fold is made, the following numbers would be visible 2, 3, 5, 8, 6. Only 2 is common and so this is the number that will still be visible.
16. **Soln:** (E) The number of 3-laps in 36 laps is  $\frac{36}{3} = 12$ . This is the number of 4-laps. The total number of laps Shayne would have completed is  $12 \times 4 = 48$ .
17. **Soln:** (C) Fifteen minutes into the movie, the time will be 9:00 a.m. Forty-five minutes into the movie, the time will be 9:30 a.m. and the movie finishes in another 2 hours at 11:30 a.m.
18. **Soln:** (D) Each friend will age by 4 years for a total of  $4 \times 4 = 16$  years. The new sum will be  $31 + 16 = 47$ .
19. **Soln:** (B)  $5 - 1 = 4$  and so the distance between the two displayed numbers is 4. Only 2 and 10 are separated by a distance of 4. 10 to 12 is 2 units and 12 to 2 is 2 units.
20. **Soln:** (C) \$5,000,000 is five million dollars and the total is  $7 \times \$5,000,000 = \$35,000,000$ .
21. **Soln:** (B) There are two choices for the first to enter ( $H$  and  $R$ ). If  $H$  is first, the second must be  $R$  and the third must be  $J$ . This accounts for one order ( $H, R, J$ ). If  $R$  is first, the second must be  $J$  and the third must be  $H$ . This accounts for another order ( $R, J, H$ ). The total is 2.
22. **Soln:** (D) Each smaller square makes up  $\frac{1}{4}$  of the large square. Dividing the four smaller squares into 4 congruent triangles, result in the big square being divided into 16 such congruent triangles. The number shaded is  $2 + 1 + 1 + 2 = 6$  and the fraction is  $\frac{6}{16} = \frac{3}{8}$ .

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23. **Soln:** (B) In 30 minutes she took her second pill and in 60 minutes she took her 3rd pill. Now 60 minutes is 1 hour and so she took her 3rd pill after 1 hour. Adding this time to 09:05, we get 10:05.
24. **Soln:** (D) Consider colouring the semi-circle and then the square. There are two ways for the semi-circle and three ways for the square. The multiplication rule says the total number of ways of coloring the figure is  $2 \times 3 = 6$ . The six pairs of colours are  $(y, b), (y, g), (y, p), (r, b), (r, g), (r, p)$ .
25. **Soln:** (A) Jogging at the same rate, she travels 3 km in 40 minutes and 9 km in 120 minutes or in 2 hours. This means that she can jog 18 km in 4 hours.