



PUMA MATH CONTEST

MATH CONTEST – Model Paper

Grade 8

Duration: 2 Hours.

Student's Index Number: _____

Instructions

1. Do not open the contest booklet until you are told to do so.
2. Electronic devices (Calculators, mobile phone ..) are not permitted
3. Please use pen to write the answer.
4. You may use rulers, compasses and paper for rough work.
5. When your supervisor instructs you to start, you will have 2 hours of working time.
6. Scoring: Total 100 points; three are three parts, Part A. is worth 45 Marks, Part B, is worth 30 Marks and Part C, is worth 25 marks.

FOR MORE INFORMATION:

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Grade8 Math Contest
Year 2014 Sample Paper Total of 100 points

Part A: Each correct answer is worth 1 point [Total of 45 points]

1. Evaluate each expression:

a. $1 + \sqrt{16} \div 4 - 2^3 =$

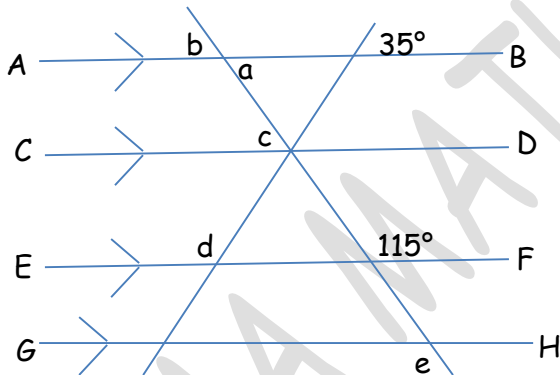
b. $(3 \times 1)^2 \div 3 - 1 =$

c. $(5 - 2)^2 + \sqrt{25} =$

d. $2.5 + (2^3 - 2)^2 - 5.5 =$

e. $\sqrt{25} - (\sqrt{16} - 2)^3 =$

2. Lines AB, CD, EF, and GH are parallel to each other. What are the measures of the angles a, b, c, d, and e?



3. Determine the missing values.

a. $\frac{4}{80} = \underline{\hspace{1cm}}\%$

b. 15% of $\underline{\hspace{1cm}}$ = 6

c. $\frac{45}{20} = \underline{\hspace{1cm}}\%$

d. 32% of 100 = $\underline{\hspace{1cm}}$

e. 0.8% of 5,000, 000 = $\underline{\hspace{1cm}}$

4. Express each number in standard/scientific form.

a. $1.23 \times 10^3 =$

c. $1.902 \times 10^4 =$

e. $1.092 \times 10^{-2} =$

b. $354.99 =$

d. $0.01234 =$

5. Solve each equation.

a. $2x - 12 = 12$

b. $\frac{x}{2} + \frac{x}{3} = 4$

c. $2x - 5 = 15 - 2x$

d. $3x - 4 = 2x - 16$

e. $2x - 3 = x + \frac{9}{10}$

6. Add or Subtract: Leave the answer in simplified form.

a. $2\frac{2}{5} \times \frac{1}{2} =$

b. $3\frac{1}{2} \div 1\frac{3}{7} =$

c. $1\frac{2}{5} + 2\frac{1}{2} - 5\frac{3}{7} =$

d. $\frac{7}{3} + \frac{1}{2} \times \frac{5}{2} =$

e. $\frac{2}{5} \times 2 - \frac{3}{2} =$

7. Determine the prime factorization of the following numbers.

a. $117 =$

b. $100 =$

c. $46 =$

8. Calculate the unit rate.

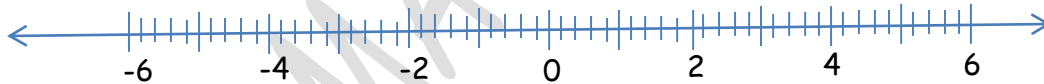
a. 90 km travelled in 30 min.

b. \$12.50 for 0.5 kg of salmon.

9. Order the numbers from least to greatest.

$0.25, 0.\overline{25}, 0.\overline{2\overline{5}}, \frac{2}{9}$

10. Show the position of $-\frac{23}{4}$ on the number line below.



11. Cheema sells old cars and earns 10% commission on her sales. One week she sold 3 Mercedes Benzes, each worth \$10,000. How much commission did she earn?

12. Estimate $(-2) \times (-9) - (-14) \div 7$.

13. What are the area and the circumference of a circle with a diameter of 10 cm?

14. Calculate the value of the expression $2d - 7$ when $d = -2$.

15. The first four terms of a sequence are 1, 2, 4 and 8. What is the sum of the first 6 terms?

16. The longest length and the shortest length of a right-angled triangle are 10 cm and 6 cm. What is the length of the third side?

17. A letter is chosen at random from the word STATISTICS. Find the probability that the letter is a vowel.

Part B: Each correct answer is worth 3 points [Total of 30 points]

STEPS MUST BE SHOWN TO Each QUESTION.

18. Six times a number increased by 5 is 263. Find the number.

19. Kyle earns \$75 for working 7.5 hours. How long will he have to work to earn \$800.00?

20. Asia and Persia bought a \$10 lotto ticket together. Asia contributed \$8 and Persia contributed \$2. Their ticket won the jackpot of \$100,000. What proportion of the money should Asia receive if the jackpot is shared in the same ratio as their contributions?

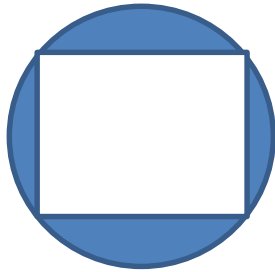
21. The digits 1, 2, 3 and 9 can be arranged to make many different four digits numbers. What is the sum of the largest and the smallest of these numbers?

22. There are 36 students in a class. The ratio of boys to girls is 4: 5. How many girls are in the class?

23. If $x = -5$ and $y = 2$, evaluate the expression $2(x - y)^2$.

24. Kelvin bought 4 pizzas to share with his family. Together, they ate $1\frac{5}{12}$ pizzas on Friday and $\frac{3}{4}$ of a pizza on Saturday. How much pizza is left after Saturday?

25. A square is inscribed in a circle of radius one. What is the area of the shaded region? Show your steps and leave your answer in terms of π (pi).

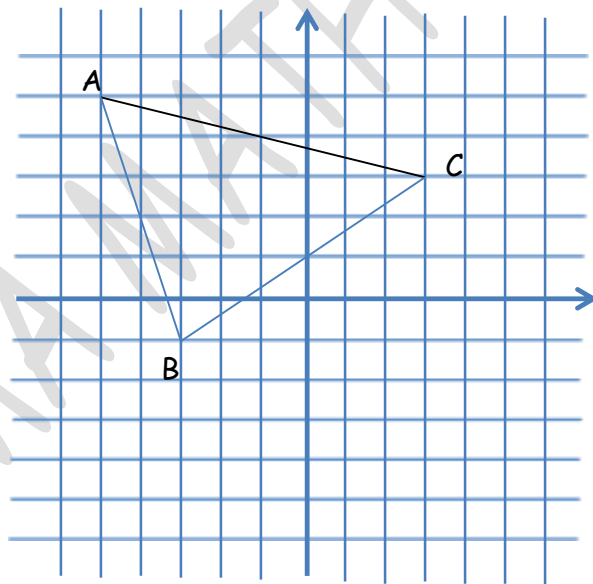


26. The height of an equilateral triangle is also the perpendicular bisector of its base. Determine the area of an equilateral triangle that has 10 cm sides.

27. Calculate the surface area of a cylinder with radius 1 cm and the side length of 10 cm.

Part C: Each correct answer is worth 5 points [Total of 25 points]

28. Running an old gas-powered lawn mower for 1 h can create as much pollution as driving a new car 550 km. It takes Isaac 45 min to mow his front and back lawns. How far would a person have to drive a new car to generate the same pollution?
29. An airplane travels about 1500 km in a straight line between Toronto and Timmins. However, the plane must climb to 10 000 m during the first 200 km. Then it must descend 10 000 m during the final 300 km.
- How much distance do the climb and descend add to the flight.
 - The airplane averages a speed of 600 km/h. Do climbing and descending 10,000 m add hours, minutes or seconds to the flight? Explain.
30. Determine the coordinates of the image of the $\triangle ABC$ after a rotation of 180° CCW about the origin. And then sketch the image on the grid below.



31. Create a tree diagram to show all possible outcomes for tossing four coins.
What is the probability of not getting any Tails?

32. In a woodlot a forest manager has found that 3000 trees are ready for cutting. In this woodlot 40% of the trees are conifers, and 60% are "leafy" trees. Also 62% of the leafy trees are maples, while 25% of the conifers are pines. Altogether how many maples and pines can be cut?