Grade 8 Math Model Paper 9

MODEL PAPER

Full marks 50 · 2 hours

Name _____ Class _____ Roll no. _____ Date _____ Marks _____ / 50

All questions are compulsory. Time: 2 hours.

A practice paper by Science Playground, made to CDC's Specification Grid 2078, Mathematics, Grades 6–8; not an official CDC or exam board paper. Mark it yourself online: the QR code below opens the paper with its answers.

A full practice run of the BLE Mathematics paper: 50 marks in 2 hours, 12 questions, every one compulsory. The marks of each part are in brackets. Show your working on paper as in the exam hall, then open each part's answer and give yourself the marks its scheme allows. You need graph paper for Questions 7 and 11, and a ruler and protractor for Question 10.

Question 1 — 3 marks

Barsha sells pickles at weekly markets in Kanchanpur. In the Venn diagram, U is the set of the days of the week, K is the set of market days in one town and L is the set of market days in another.

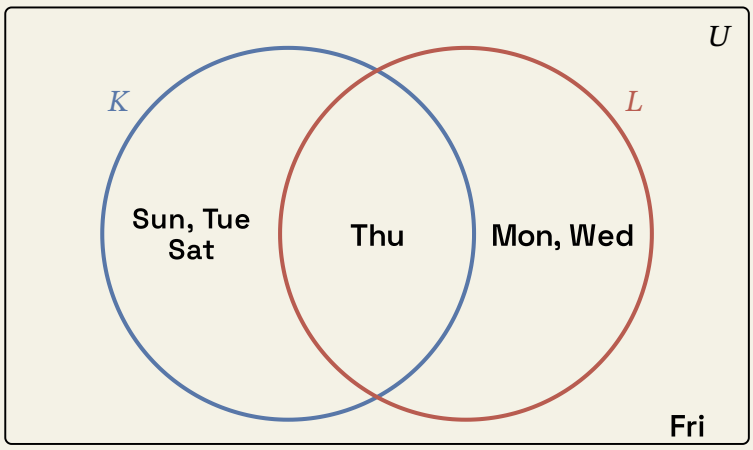


Figure 1 The market days in the two towns.

a. What is an empty set? **[1]**

b. Write the set of days on which there is a market in at least one of the towns. **[1]**

c. Barsha says, "With these two towns I can sell at a market every day of the week." Is she right? Give a reason. **[1]**

Question 2 — 5 marks

Jitendra and a partner have a clothes shop in Birgunj.

a. If the cost price and the loss are represented by CP and L respectively, write the formula to find the loss percent. **[1]**

b. They buy 20 shirts at Rs 800 each. They sell 15 of them at Rs 1,000 each and the last 5 at Rs 600 each. Find their profit percent. **[2]**

c. Jitendra paid Rs 9,600 of the cost, and his partner paid Rs 6,400. The partner says, "Let's take Rs 1,000 each of the profit." Is this fair to Jitendra, if they share in the ratio of what they paid? Give a reason. **[2]**

Question 3 — 5 marks

Nasreen runs a tailoring class in Krishnanagar.

a. She keeps Rs 25,000 in a bank at 8% simple interest a year. How much interest does it make in one year? **[1]**

b. A roll of cloth makes 30 uniforms of 2.4 m each. How many uniforms of 1.8 m each can be made from the same roll? **[2]**

c. A stitch is 2.5×10^{-3} m long. How long is a seam of 4×10^{3} stitches? **[1]**

d. One of her students writes the number of buttons in a box as 1272_5. Can this number be right? Give a reason. **[1]**

Question 4 — 4 marks

Ashok's teacher in Damak writes these numbers on the board: $\sqrt{16}$, $\sqrt{7}$, 0.125, π and $0.\overline{135}$.

a. What is a rational number? **[1]**

b. Which of the numbers on the board are irrational? **[1]**

c. Convert $0.\overline{135}$ into a fraction in its lowest terms. **[2]**

Question 5 — 5 marks

Ankita has a plot ABC in Sunsari in the shape of a right-angled triangle, with $AB = 30$ m, $AC = 40$ m and $BC = 50$ m. Her cow is tied by a rope of 14 m to a post at the corner A. (Take $\pi = \frac{22}{7}$.)

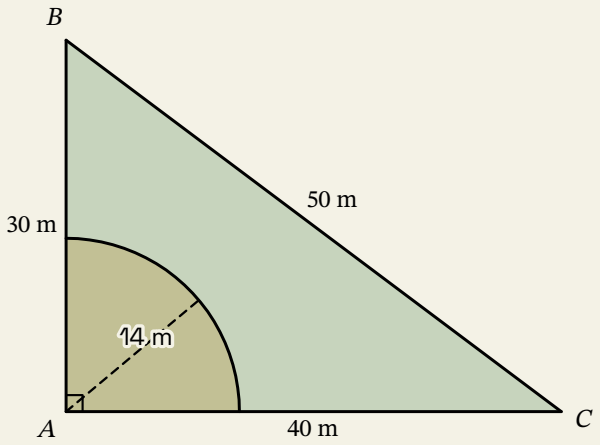


Figure 2 Ankita's plot, and the part the cow can reach.

a. Write the formula to find the area of a right-angled triangle with base b and height h. **[1]**

b. Find the area of the plot. **[1]**

c. Find the area of the plot that the cow can't reach. **[2]**

d. Ankita changes the rope for one of 21 m. Can the cow now reach the side BC? Give a reason. **[1]**

Question 6 — 3 marks

a. Write $\left(\frac{x}{y}\right)^{n}$ without the brackets. **[1]**

b. Simplify: $\frac{x^2}{x-y} - \frac{y^2}{x-y}$ **[2]**

Question 7 — 3 marks

Two numbers x and y add up to 7. Three times x, less y, is 5. So $x + y = 7$ and $3x - y = 5$.

a. Write $3x - y = 5$ with y on its own on one side. **[1]**

b. Find the two numbers by using a graph. **[2]**

Question 8 — 4 marks

a. Factorize: $3x^2 - 10x + 8$ **[2]**

b. Rabin in Waling puts a photo 12 cm long and 8 cm wide on a card, with a border of the same width x cm all round it. The card has an area of 140 cm². He says the border is 2 cm wide. Is he right? Make a quadratic equation and give a reason. **[2]**

Question 9 — 4 marks

Sanskriti is a carpenter in Bhojpur, and she draws her work on squared paper first.

a. Which theorem is the distance formula between two points on her squared paper based on? **[1]**

b. In a stand she is making, the bars AB and CD are parallel, and EF is a brace. Find the value of x. **[2]**

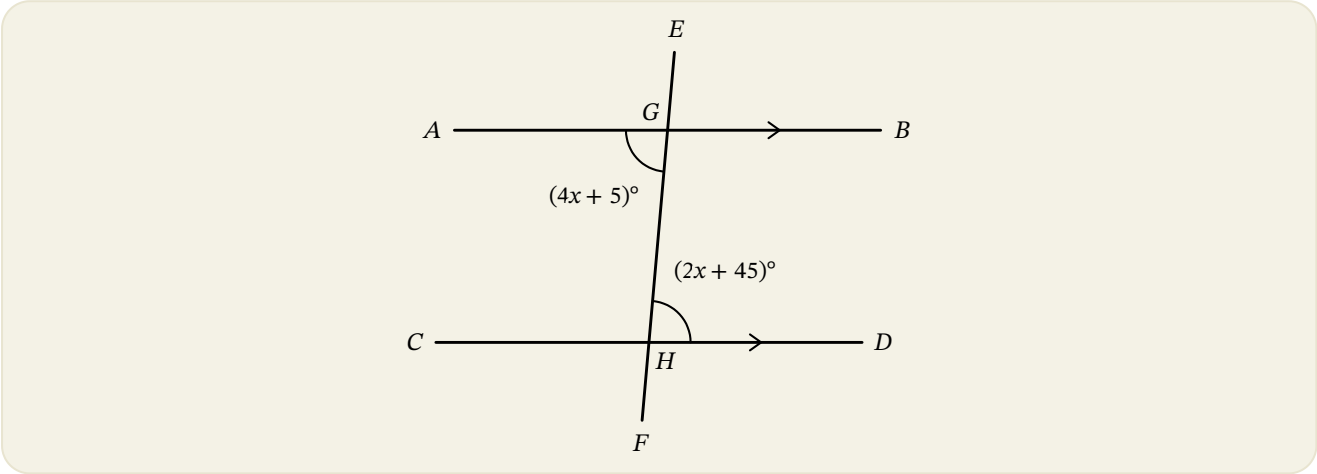


Figure 4 $AB \parallel CD$, $\angle AGH = (4x + 5)^\circ$ and $\angle DHG = (2x + 45)^\circ$.

c. The diagonals of a frame she has made cross at right angles. A customer says, "Then it must be a rhombus." Is the customer right? Give a reason. **[1]**

Question 10 — 5 marks

Bishal's school in Dailekh has a rectangular ground 30 m long and 20 m wide.

a. Make a scale drawing of the ground, with the scale 1 cm = 5 m. From your drawing, find the length of a diagonal of the real ground. **[3]**

b. A nearby school's ground is 45 m long and 25 m wide. Bishal says that the two grounds are similar figures. Is he right? Give a reason. **[2]**

Question 11 — 6 marks

Rupa in Lamjung is making decorations for a school function.

a. She cuts a party hat from a part of a circle. Which solid object has this kind of curved surface? **[1]**

b. She wants to cover a board with regular pentagons, with no gaps. Is this possible? Give a reason. **[2]**

Answer the following question on the basis of the given figure, in which $KLMN$ is a paper shape on a grid.

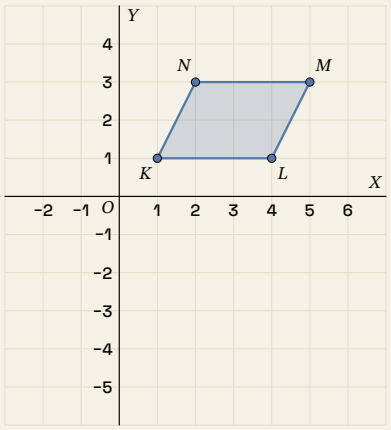


Figure 6 $KLMN$ on a grid.

c. Rotate $KLMN$ about the origin through −90°. Draw the image on the same graph, and write the coordinates of K', L', M' and N'. **[3]**

Question 12 — 3 marks

Hikmat's football team in Kalikot scored these goals in nine matches.

2, 0, 3, 1, 2, 4, 2, 1, 3

a. Find the median of the goals. **[1]**

b. Find the mean of the goals. If the team scores 8 goals in its tenth match, what will the new mean be? **[2]**