

**Multiple-choice questions:**

---

How many logs had been there initially if after 52 saw cuts, 72 wood bars were produced?

- 1) 25;
  - 2) 20;
  - 3) 22;
  - 4) none of the above.
- 

The inequality  $ax < 3$

- 1) has infinitely many solutions in  $x$  for any value of the parameter  $a$ ;
  - 2) has the solution  $x = 0$  has  $a$ ;
  - 3) has no solutions;
  - 4) none of the above.
- 

The bisector of  $\angle BAC$  of the triangle  $ABC$  intersects the circumcircle at the point  $D$ . The chord  $DE$  is parallel to the line  $AB$ . Compare the lengths of the line segments  $AC$  and  $DE$ .

- 1)  $AC < DE$ ;
  - 2)  $AC = DE$ ;
  - 3)  $AC > DE$ ;
  - 4) The information in the question is not sufficient to provide an answer.
- 

**Short answer questions:**

---

Cities **A** and **B** are 150 km apart. A car left city **A** and drove to **B**; 30 later a motorcyclist left city **A** and rode at a speed of 90 km/h, caught up with the car at city **C** and turned back. The motorcyclist returned to **A** at the same moment as the car arrived to **B**. Find the distance from **A** to **B**. Give the answer in kilometres.

---

Find the least integer  $a$  such that the positive root of the equation  $3x^2 + 4x - a = 0$  is smaller than the absolute value of its negative root.

---

Solve the inequality  $(x - 1) \cdot |x + 1| > 0$ . Enter its smallest integer solution.

---

Find the angle in a triangle if its median equals half of its side and the angle  $K$  between a bisector and a side is  $80^\circ$ .

---

The diagonal  $AC$  of a rectangle  $ABCD$  equals 5 and the angle between  $AC$  and  $AD$  is  $30^\circ$ . The side  $AD$  is extended beyond  $D$  with the extension  $DE = 3$ . The line segment  $BE$  intersects  $CD$  at a point  $K$ . What ratio does  $BE$  divide  $CD$  in?