Name:

Group 1

Result:

1. (1 point) Which of the following numbers is equal to $\sqrt{2}$? Choose all that apply:

   A. $8^{\frac{1}{4}}$ B. $\dfrac{1}{2^{-2}}$ C. $(0.25)^{-\frac{1}{4}}$ D. $\sqrt{8} - \sqrt{2}$

2. (1 point) The sides of a rectangle has been measured to be $40cm$ and $50cm$ correct to the nearest $10cm$. The lower bound for the area of the rectangle is (select all that apply):

   A. $1575 \ cm^2$ B. $15.75 \ dm^2$ C. $15.75 \ m^2$ D. none of the A,B,C

3. (1 point) Which of the following pairs of numbers are co-prime. Select all that apply:

   A. 18 and 125   B. 27 and 32   C. 25 and 42   D. 33 and 121

4. (1 point) $\sqrt{75} + \sqrt{48} - 3\sqrt{12} =$ (select all that apply)

   A. $2\sqrt{3}$ B. $\sqrt{27}$ C. $\sqrt{54}$ D. $3\sqrt{6}$

5. (1 point) Which of the following numbers are divisible by 11? Select all that apply.

   A. 1122334455   B. 41414141   C. 5555555   D. 72278338

6. (2 points) One year a dress costed 400PLN and a jacket costed 160PLN. A year later the price of the dress increased by 8% and the price of the jacket decreased by 6%. Find the percentage change in the total price of the dress and the jacket.

7. (2 points) List all positive divisors of 80. State which of these divisors are prime numbers.

8. (2 points) Prove that the sum of 4 consecutive even numbers is divisible by 4.

9. (2 points) Simplify the following, leave your answer in the form a^k, where $a \in \mathbb{N}$ and $k \in \mathbb{Q}$:

$$\frac{3^2 \times 27^{2/3} \times 9^{-1}}{81^{1/2} \times \sqrt[3]{9} \times \sqrt{3}} =$$

10. (2 points) Simplify the following, leave your answer in the form $x^m y^n$, where $m, n \in \mathbb{Q}$:

$$\frac{(xy^2)^2 \times \sqrt{x} \times y^{-2}}{\sqrt[4]{xy^3}} =$$

11. (5 points) The following diagram shows a rectangle with sides of length 9.5×10^2 m and 1.6×10^3 m.
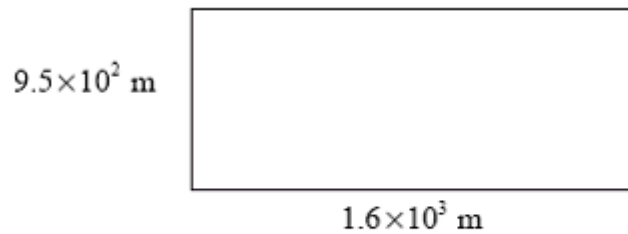
9.5×10² m

1.6×10³ m

diagram not to scale

(a) Write down the area of the rectangle in m^2 in the standard form.

Helen's estimate of the area of the rectangle is 1600000 m^2.

(b) Write down both the exact area of the rectangle and Helen's estimate in km^2.

(c) Find the percentage error in Helen's estimate.

(d) Calculate the perimeter of the rectangle, give your answer in kilometres rounded to the nearest kilometre.