4 Sawmill

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Challenge

The sawing elves Zick and Zack are working in the sawmill of Santa Clause. In the morning, they receive four wooden square-shaped panels, each of dimensions $4\,m \times 4\,m$, and a work schedule. To fulfil their tasks, Zick and Zack always make use of a magic blade that has zero width.

- Part A of their work schedule asks them to cut the first panel into four congruent quadrilaterals such that each quadrilateral has a circumcircle of diameter $\sqrt{8}\,m$.
- Part B asks them to cut the second panel into four congruent quadrilaterals such that each quadrilateral has a circumcircle of diameter $\sqrt{10}\,m$.
- Part C asks them to cut the third panel into four congruent quadrilaterals such that each quadrilateral has a circumcircle of diameter $\sqrt{12}\,m$.
- Part D asks them to cut the fourth panel into four congruent quadrilaterals such that each quadrilateral has a circumcircle of diameter $\sqrt{17}\,m$.

Zick scratches his head and complains, "This work schedule is extremely imprecise. It does not tell us the exact shape of these congruent quadrilaterals."
Zack also scratches his head and laments, "Perhaps our central administration has once again given us on an impossible task. This has happened before!"

Can you help Zick and Zack?

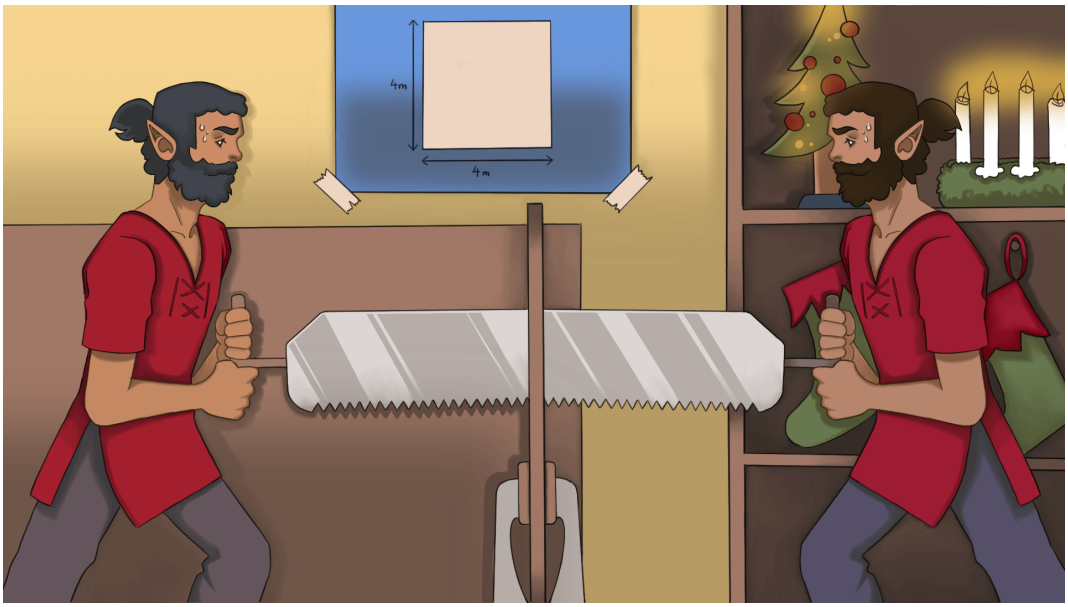

Illustration: Julia Nurit Schönnagel

Possible answers:

1. Only parts A and B of the work schedule are feasible.
2. Only parts A and C of the work schedule are feasible.
3. Only parts A and D of the work schedule are feasible.
4. Only parts B and C of the work schedule are feasible.
5. Only parts B and D of the work schedule are feasible.
6. Only parts A, B, C of the work schedule are feasible.
7. Only parts A, B, D of the work schedule are feasible.
8. Only parts A, C, D of the work schedule are feasible.
9. Only parts B, C, D of the work schedule are feasible.
10. All four parts of the work schedule are feasible.