

Build Tasks – Answers



1. A school must be built the same distance from towns A and B. On which line should the school lie?

Solution The perpendicular bisector of AB.

2. A dog is tied to peg P with a 3 m lead. What locus shows all possible positions of the dog?

Solution A circle, centre P, radius 3 m.

3. A path must stay exactly 2 m from a straight fence. What locus should be drawn?

Solution Two parallel lines, 2 m each side of the fence.

4. Two roads meet at a corner. A bus stop must be equal distance from both. Which line gives its positions?

Solution The angle bisector of the two roads.

5. If point C is on the perpendicular bisector of AB and $CA = 7$ cm, find CB.



Solution $CB = 7$ cm — on the bisector $CA = CB$.

6. A point lies on the bisector of an 80° angle. What are the two equal angles?

Solution 40° and 40° ($80^\circ \div 2$).

7. A playground must be within 5 m of tree T. Describe the region that should be shaded.

Solution The disc inside and on the circle of radius 5 m about T.

8. A lamp post must be equal distance from the two walls of a corner. Which locus is used?

Solution The angle bisector of the corner.

9. Two circles of radius 4 cm are centred at A and B. If they meet at X, what are XA and XB?

Solution $XA = XB = 4$ cm — X lies on each circle.

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10. To find the midpoint of ribbon AB , which special line do you construct first?

Solution The perpendicular bisector of AB .

11. What is the locus of points exactly 3 cm from line l ?



Solution Two parallel lines, 3 cm each side of l .

12. A rescue point is equidistant from wharves A and B , and 2 km from lighthouse L . Which two loci intersect?

Solution The perpendicular bisector of AB and the circle, centre L , radius 2 km.

13. Why must the compass radius exceed half of AB when constructing its perpendicular bisector?

Solution Otherwise the two arcs are too short to cross.

14. Two straight paths cross. How many angle bisector lines are possible?



Solution Two — the internal and external bisectors (at right angles).

15. Which set is larger: points exactly 4 cm from P , or points at most 4 cm from P ?

Solution At most 4 cm — the whole disc, not just the boundary.

16. A circle has centre O and radius 6 cm. Is a point 8 cm from O on the locus?

Solution No — $8\text{ cm} \neq 6\text{ cm}$.

17. If two loci do not cross at all, how many solutions does the problem have?

Solution Zero.

18. If two loci just touch once, how many solutions are there?

Solution One.

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19. If two loci cross twice, how many solutions are there?

Solution Two.

20. Describe the region inside radius 3 cm of O but outside radius 1 cm of the same centre O .

Solution The ring (annulus) between the 1 cm and 3 cm circles.

21. A cyclist must stay 1 m from a painted centre line on either side. What locus shows all allowed wheel tracks?

Solution Two parallel lines, 1 m each side of the centre line.

22. Which tool should be used to draw a circle accurately: compass or ruler?

Solution A compass.

23. What measurement stays fixed while a circle is being constructed?

Solution The radius.

24. If X and Y are the intersections of equal-radius arcs from A and B , what line passes through X and Y ?

Solution The perpendicular bisector of AB .

25. If a 70° angle is bisected, what two equal angles are formed?

Solution 35° and 35° ($70^\circ \div 2$).

26. What is the locus of points equal distance from two parallel lines?

Solution The line halfway between them, parallel to both.

27. A place is equidistant from A , B , and north of AB . Which bisector part is relevant?

Solution The part of the perpendicular bisector of AB north of AB .