Constructions: parallels, triangles and polygons worksheet – Grade 10

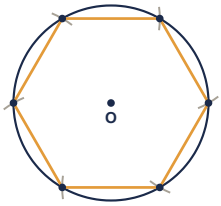
Grade 10 · Mixed level · 20 questions · **Version X4112**

Name: _____ Date: _____ Score: ___ / 20

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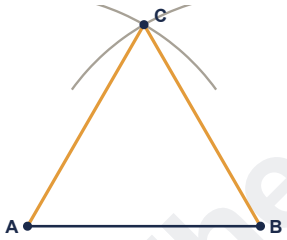
1. What does this compass construction make?



A. Regular hexagon in a circle **B.** Perpendicular bisector of a segment

C. Angle bisector **D.** Parallel line through a point

2. An equilateral triangle is constructed on a base of 3 cm. What is its perimeter, in cm?

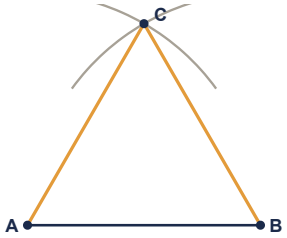


Answer: _____ cm

3. You construct a 90° angle and bisect it. What angle do you get?

A. 45° **B.** 60° **C.** 30° **D.** 22°

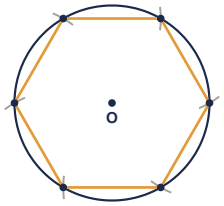
4. What angle is at each corner of an equilateral triangle, in degrees?



Answer: _____ °

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5. A regular hexagon is drawn in a circle of radius 8 cm. How long is each side, in cm?

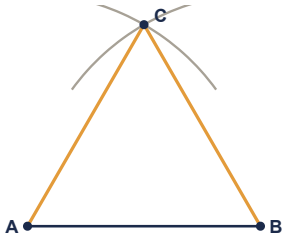


Answer: _____ cm

6. You construct a 60° angle and bisect it. What angle do you get?

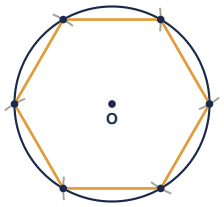
A. 30° **B.** 15° **C.** 120° **D.** 45°

7. An equilateral triangle is constructed on a base of 14 cm. What is its perimeter, in cm?



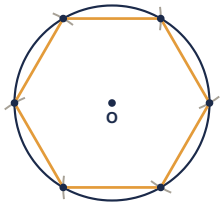
Answer: _____ cm

8. A regular hexagon has a perimeter of 42 cm. What is the radius of its circle, in cm?



Answer: _____ cm

9. After a regular hexagon is drawn in a circle, how do you get an equilateral triangle?



A. Join every mark **B.** Join opposite marks **C.** Join every second mark

D. Bisect one side

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10. Can a triangle with sides 5, 8 and 11 cm be constructed?

    A. No, the two short sides do not reach **B.** Yes **C.** No, the sides must be equal

    D. Only with a protractor

11. Can a triangle with sides 1, 6, 9 cm be constructed?

    A. Only if it is isosceles **B.** No, the two short sides do not reach

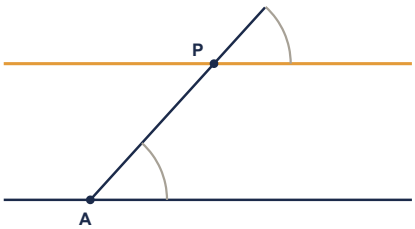
    C. Only as a right triangle **D.** Yes

12. How can you construct an angle of 105° with a compass and straightedge?

    A. Build an equilateral triangle **B.** Bisect a 90° angle **C.** Construct a perpendicular

    D. Put a 90° and a 15° angle side by side

13. Why is the line through P parallel to the base?



    A. The copied corresponding angles are equal **B.** The two lines have the same length

    C. P is on the base **D.** The arcs are equal circles

14. How can you construct an angle of 15° with a compass and straightedge?

    A. Bisect a 30° angle **B.** Build an equilateral triangle **C.** Bisect a 60° angle

    D. Put a 60° and a 15° angle side by side

15. A triangle has sides 5, 9 and x cm, with x a whole number. What is the greatest possible value of x?

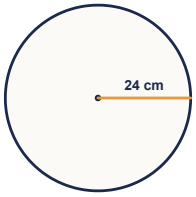
    Answer: _____

16. Using a compass and straightedge, an angle of 22.5° comes from bisecting which angle? (Give the degrees.)

    Answer: _____

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17. In a circle of radius 24 cm, a square is built on two perpendicular diameters. What is its area, in cm²?



Answer: _____ cm²

18. How can a square be constructed in a circle?

A. Draw a diameter, then its perpendicular bisector, and join the four ends

B. Bisect one chord only **C.** Step the radius around the circle **D.** Draw three equal arcs

19. How do you divide a segment into three equal parts?

A. Mark three equal steps on a slanted line, and draw parallels back to the segment

B. Bisect it, then double **C.** Bisect it twice **D.** Draw a circle through the ends

20. Two sides and an angle NOT between them are given. How many triangles might the construction give?

A. Always three **B.** Always exactly one **C.** Always none **D.** Possibly two

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Answer key · Version X4112

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1. **A (Regular hexagon in a circle)**
2. **9**
3. **A (45°)**
4. **60**
5. **8**
6. **A (30°)**
7. **42**
8. **7**
9. **C (Join every second mark)**
10. **B (Yes)**
11. **B (No, the two short sides do not reach)**
12. **D (Put a 90° and a 15° angle side by side)**
13. **A (The copied corresponding angles are equal)**
14. **A (Bisect a 30° angle)**
15. **13**
16. **45**
17. **1152**
18. **A (Draw a diameter, then its perpendicular bisector, and join the four ends)**
19. **A (Mark three equal steps on a slanted line, and draw parallels back to the segment)**
20. **D (Possibly two)**

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