Altitudes and the orthocentre worksheet – Grade 10

Grade 10 · Mixed level · 20 questions · **Version X3508**

Name: _____ Date: _____ Score: ___ / 20

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1. Where is the orthocentre of a right triangle?

   A. At the right-angle vertex **B.** At the midpoint of the hypotenuse

   C. Outside the triangle **D.** At the centroid

2. A triangle has an area of 105 cm² and a base of 14 cm. How long is the altitude to that base, in cm?

   Answer: _____ cm

3. What is an altitude of a triangle?

   A. A segment from a vertex at right angles to the opposite side

   B. A segment to the midpoint of a side **C.** A line splitting an angle **D.** The base

4. Where is the orthocentre of an obtuse triangle?

   A. Outside the triangle **B.** Inside the triangle **C.** On a side **D.** At a vertex

5. A triangle has base 9 cm and altitude 9 cm. What is its area, in cm²?

   Answer: _____ cm²

6. A triangle has an area of 100 cm² and a base of 20 cm. How long is the altitude to that base, in cm?

   Answer: _____ cm

7. A triangle has base 13 cm and altitude 8 cm. What is its area, in cm²?

   Answer: _____ cm²

8. Work out the slope of the altitude from A to a side with slope 2. Give a fraction.

   Answer: _____

9. A right triangle has legs 6 and 8 and hypotenuse 10. How long is the altitude to the hypotenuse?

   Answer: _____

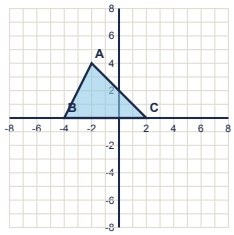
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10. A triangular sail has a base of 19 m and an area of 76 m². How high is the sail, in metres?

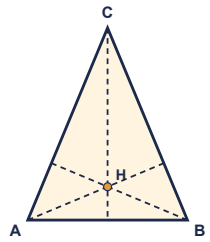
    Answer: _____ m

11. In triangle A(-2, 4), B(-4, 0), C(2, 0), what is the length of the altitude from A?



    Answer: _____

12. A triangle has sides 13, 13 and 10 and an area of 60. How long is the altitude to the side of length 10?



    Answer: _____

13. Work out the slope of the altitude from A to a side with slope 4. Give a fraction.

    Answer: _____

14. A right triangle has legs 8 and 15 and hypotenuse 17. How long is the altitude to the hypotenuse? Give your answer to two decimal places.

    Answer: _____

15. Find the equation of the altitude from A in triangle A(-3, 6), B(-7, 0), C(1, 0).

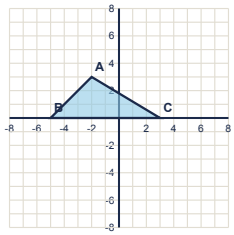
    A. $y = 6$ **B.** $x = 6$ **C.** $y = -3$ **D.** $x = -3$

16. What is the equation of the altitude from A in triangle A(1, 4), B(-1, 0), C(4, 0)?

    A. $y = 1$ **B.** $x = 1$ **C.** $x = 4$ **D.** $y = 4$

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17. In triangle A(-2, 3), B(-5, 0), C(3, 0), what is the y-coordinate of the orthocentre?



Answer: _____

18. Work out the equation of the altitude from A in triangle A(1, 7), B(-4, 0), C(3, 0).

A. $x = 7$ **B.** $x = 1$ **C.** $y = 7$ **D.** $y = 1$

19. Two sides of a triangle are 15 and 24. The altitude to the side of 15 is 24. What is the altitude to the side of 24?

Answer: _____

20. In an equilateral triangle, which centres are at the same point?

A. Centroid, orthocentre, incentre and circumcentre **B.** Only the centroid and incentre

C. Only the orthocentre and circumcentre **D.** None

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Answer key · Version X3508

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1. **A (At the right-angle vertex)**
2. **15**
3. **A (A segment from a vertex at right angles to the opposite side)**
4. **A (Outside the triangle)**
5. **40.5**
6. **10**
7. **52**
8. **-1/2**
9. **4.8**
10. **8**
11. **4**
12. **12**
13. **-1/4**
14. **7.06**
15. **D ($x = -3$)**
16. **B ($x = 1$)**
17. **5**
18. **B ($x = 1$)**
19. **15**
20. **A (Centroid, orthocentre, incentre and circumcentre)**

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