Area (including circles and composite shapes) — Solutions

Worked answers showing the formula, substitution, and area for each problem.

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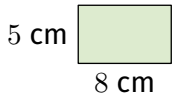
Solution method

Identify the shape, write the area formula, substitute the given dimensions, and calculate. Composite shapes are broken into simpler parts, calculated separately, then combined.

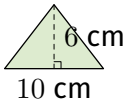
1. Rectangle: 8 cm $\times$ 5 cm



Solution

$A = 8 \times 5 = 40$ cm^2

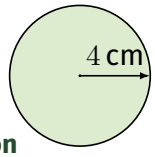
2. Triangle: base 10 cm, height 6 cm



Solution

$A = \frac{1}{2}(10)(6) = 30$ cm^2

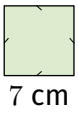
3. Circle: radius 4 cm (use $\pi = 3.14$)



Solution

$A = 3.14 \times 4^2 = 50.24$ cm^2

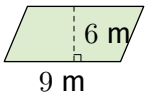
4. Square: side 7 cm



Solution

$A = 7^2 = 49$ cm^2

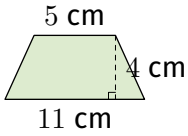
5. Parallelogram: base 9 m, height 6 m



Solution

$A = 9 \times 6 = 54$ m^2

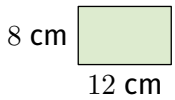
6. Trapezium: parallel sides 5 cm and 11 cm, height 4 cm



Solution

$A = \frac{1}{2}(5+11)(4) = 32$ cm^2

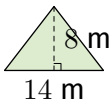
7. Rectangle: 12 cm $\times$ 8 cm



Solution

$A = 12 \times 8 = 96$ cm^2

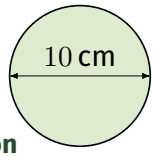
8. Triangle: base 14 m, height 8 m



Solution

$A = \frac{1}{2}(14)(8) = 56$ m^2

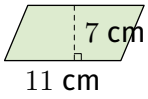
9. Circle: diameter 10 cm (use $\pi = 3.14$)



Solution

$r = 5$; $A = 3.14 \times 5^2 = 78.5$ cm^2

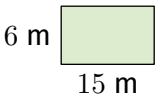
10. Parallelogram: base 11 cm, height 7 cm



Solution

$A = 11 \times 7 = 77$ cm^2

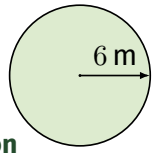
11. Rectangle: 15 m $\times$ 6 m



Solution

$A = 15 \times 6 = 90$ m^2

12. Circle: radius 6 m (use $\pi = 3.14$)



Solution

$A = 3.14 \times 6^2 = 113.04$ m^2

Area (including circles and composite shapes) — Solutions

Composite shapes: broken into simpler parts, calculated, then combined.

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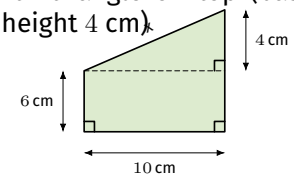
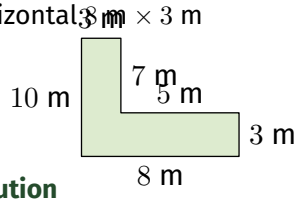
13. Composite: Rectangle 10 cm $\times$ 6 cm with triangle on top (base 10 cm, height 4 cm)



Solution

$60+20 = 80$ cm^2

14. L-shape: vertical 3 m $\times$ 10 m, horizontal 8 m $\times$ 3 m



Solution

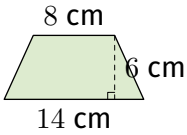
$3\times10 = 30$; $5\times3 = 15$; Total$= 45$ m^2

15. Rectangle 16 cm $\times$ 8 cm with hole radius 2 cm (use $\pi = 3.14$)

Solution

$16\times8 = 128$; hole$= 3.14\times2^2 = 12.56$;
$128 - 12.56 = 115.44$ cm^2

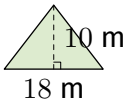
16. Trapezium: parallel sides 8 cm and 14 cm, height 6 cm



Solution

$A = \frac{1}{2}(8+14)(6) = 66$ cm^2

17. Triangle: base 18 m, height 10 m



Solution

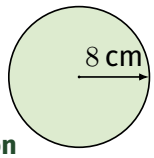
$A = \frac{1}{2}(18)(10) = 90$ m^2

18. Rectangle 12 m $\times$ 9 m minus triangle (base 12 m, height 3 m)

Solution

$12\times9 = 108$; tri$= \frac{1}{2}(12)(3) = 18$;
$108 - 18 = 90$ m^2

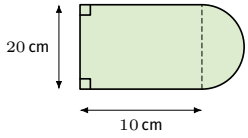
19. Circle: radius 8 cm (leave answer in terms of π)



Solution

$A = \pi(8)^2 = 64\pi$ cm^2

20. Rectangle 20 cm $\times$ 10 cm with semicircle (diameter 20 cm, use $\pi = 3.14$)



Solution

$200+157 = 357$ cm^2

21. Hexagon: rectangle 12 cm $\times$ 8 cm with two triangles (each base 12 cm, height 3 cm)

Solution

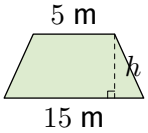
$12\times8 = 96$; $2 \times \frac{1}{2}(12)(3) = 36$;
Total$= 132$ cm^2

22. Composite: Two rectangles: 8 m $\times$ 5 m and 4 m $\times$ 7 m

Solution

$8\times5 = 40$; $4\times7 = 28$; Total$= 68$ m^2

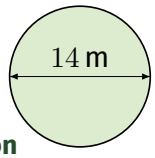
23. Find height of trapezium if area is 100 m^2 with parallel sides 5 m and 15 m



Solution

$100 = \frac{1}{2}(5+15)h = 10h$; $h = 10$ m

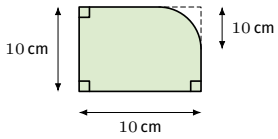
24. Circle: diameter 14 m (leave answer in terms of π)



Solution

$r = 7$; $A = \pi(7)^2 = 49\pi$ m^2

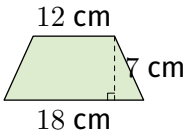
25. 10 cm square, quarter circle (radius 10 cm) cut out ($\pi = 3.14$)



Solution

$100-78.5 = 21.5$ cm^2

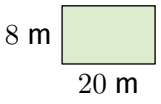
26. Trapezium: parallel sides 12 cm and 18 cm, height 7 cm



Solution

$A = \frac{1}{2}(12+18)(7) = 105$ cm^2

27. Rectangle: length 20 m, width 8 m



Solution

$A = 20 \times 8 = 160$ m^2