



**THIRD SPACE  
LEARNING**

# Area of a Trapezoid Worksheet

Geometry

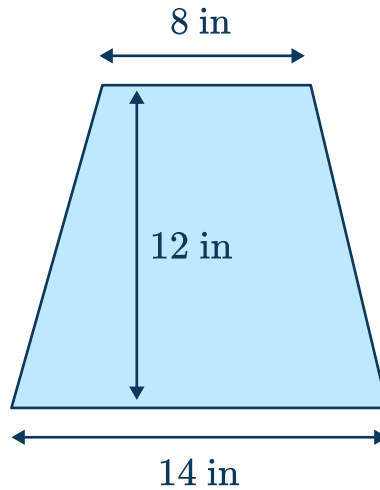
Grades 6 to 8

## Skill Questions

Name: .....

Date: .....

- 1 Decompose the trapezoid into a rectangle and two right triangles. What is the base length of each of the triangles?

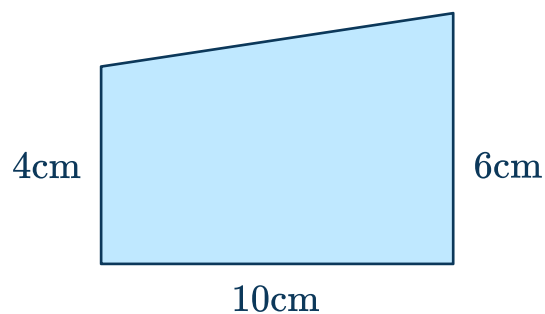


Answer

- 2 Find the area of the trapezoid in #1.

Answer

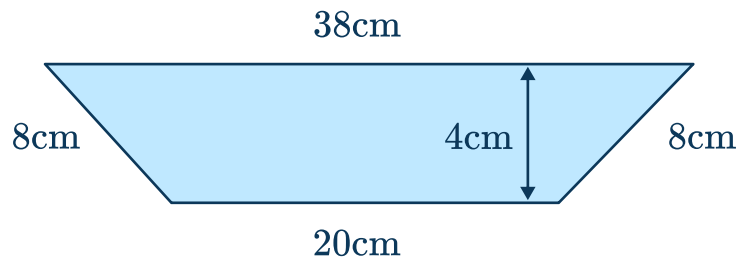
- 3 Find the area of the trapezoid.



Answer

## Area of a Trapezoid Worksheet | Grades 6 to 8

- 4 Calculate the area of the isosceles trapezoid.

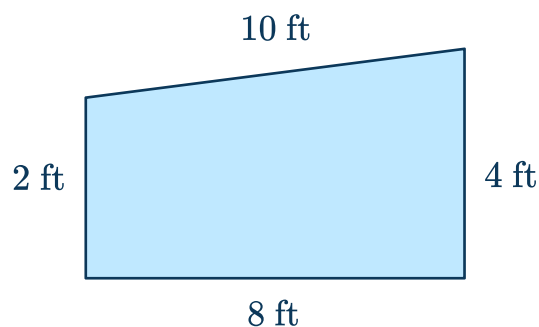


Answer

- 5 The area of an isosceles trapezoid is  $98 \text{ m}^2$ . The height of the trapezoid is  $4 \text{ m}$  and one of the bases is  $30 \text{ m}$ . What is the length of the second base?

Answer

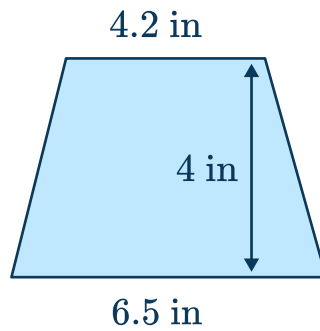
- 6 Val's garden is in the shape of a trapezoid. She wants to spread soil in her new garden. How many square feet of soil will she need?



Answer

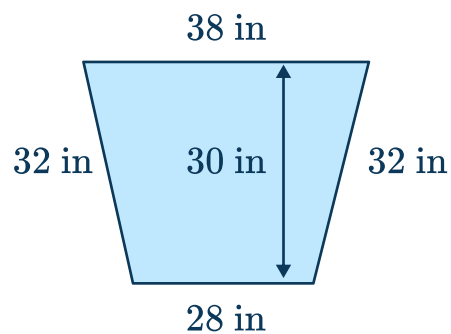
## Area of a Trapezoid Worksheet | Grades 6 to 8

- 7 Find the area of the trapezoid.



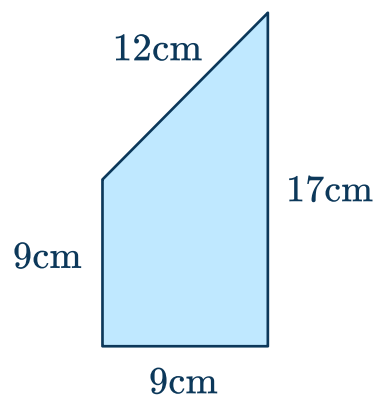
Answer

- 8 The top of an end table is in the shape of a trapezoid. Find the area of the top of the end table.



Answer

- 9 Find the area of the trapezoid.



Answer

## Area of a Trapezoid Worksheet | Grades 6 to 8

- 10 If a trapezoid has an area of  $192 \text{ ft}^2$  and base lengths of 15 ft and 17 ft, find the height of the trapezoid.

*Answer*



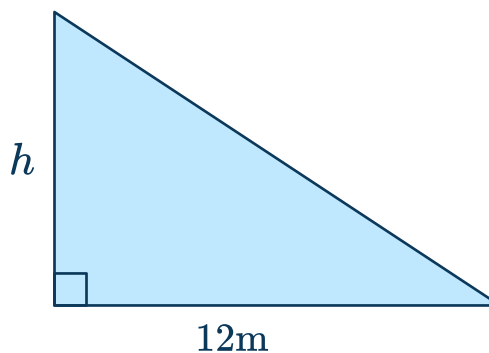
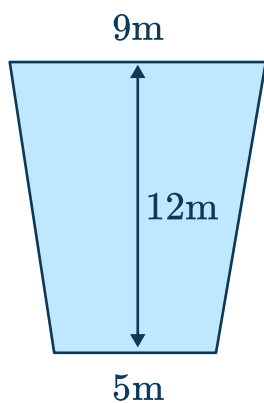
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## Applied Questions

- 11 Sketch a trapezoid and label the dimensions that have an area of  $54 \text{ in}^2$ .

Answer

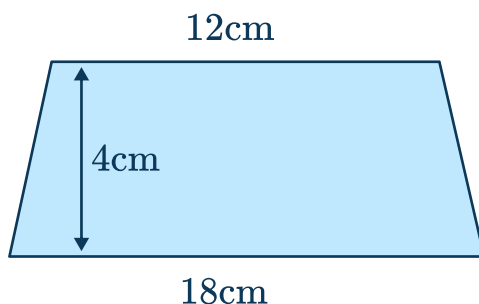
- 12 Albert says the area of the triangle is larger than the area of the trapezoid. If that is true, what can the height of the triangle be?



Answer

## Area of a Trapezoid Worksheet | Grades 6 to 8

- 13 Dillion and Brenda are doing their homework. They have to find the area of the trapezoid below.

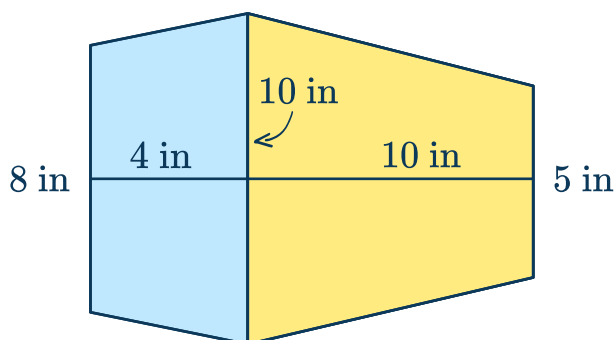


- Brenda says that she found the area by adding 12 and 18 together and then multiplying that sum to 2.
- Dillion says that he found the area by multiplying  $2 \times 3$ , doubling it, and then adding it to 48.

Describe if Brenda and Dillion are using a correct strategy.

Answer

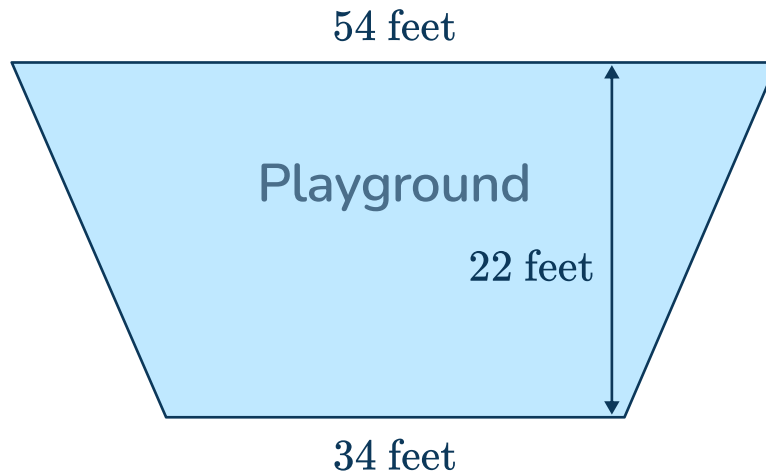
- 14 Randy is making a trapezoid shaped design that looks like the figure below. Find the area of the design.



Answer

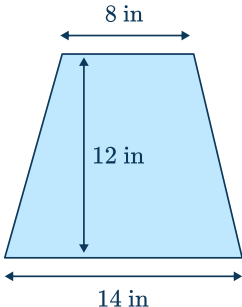
## Area of a Trapezoid Worksheet | Grades 6 to 8

- 15 The Main Street Elementary School is updating their playground which is in the shape of a trapezoid. The building supervisor wants to lay mulch on the playground to prevent injuries. If the mulch costs \$10.50 for 30 square feet, how much money will it cost to cover the playground with mulch?

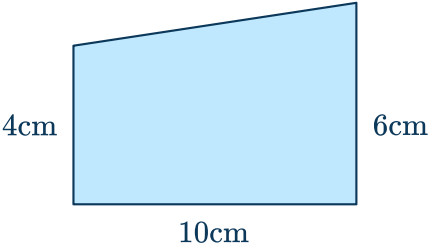
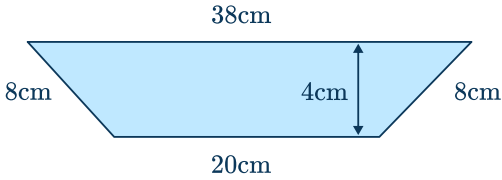


Answer

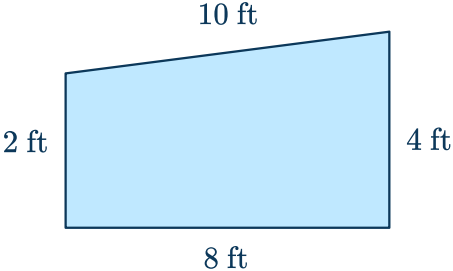
## Answers

Question number	Question	Answers	Standard
1	Decompose the trapezoid into a rectangle and two right triangles. What is the base length of each of the triangles? <div style="text-align: center; margin-top: 10px;">  </div>	3 inches  $14 - 8 = 6$ $6 \div 2 = 3$	6.G.A.1
2	Find the area of the trapezoid in #1.	$132 \text{ in}^2$  Area of both triangles: $Area = \frac{1}{2} \times 3 \times 12$  $Area = 18$ $2 \times 18 = 36 \text{ in}^2$  Area of the rectangle: $Area = 8 \times 12$ $Area = 96$  Add together to find the area of the trapezoid: Area of trapezoid = $96 + 36$ Area of trapezoid = $132 \text{ in}^2$	6.G.A.1

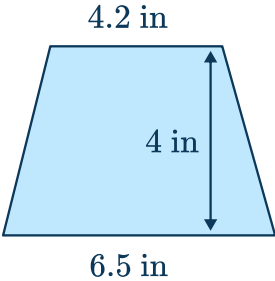
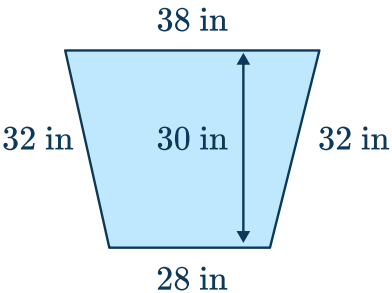
## Area of a Trapezoid Worksheet | Grades 6 to 8 | Answers

Question number	Question	Answers	Standard
3	<p>Find the area of the trapezoid.</p> 	<p><math>50 \text{ cm}^2</math></p> <p>Decomposing the trapezoid into a rectangle and a triangle.</p> <p>Area of rectangle = <math>10 \times 4</math></p> <p>Area of rectangle = <math>40 \text{ cm}^2</math></p> <p>Area of triangle = <math>\frac{1}{2} \times 2 \times 10</math></p> <p>Area of triangle = <math>10 \text{ cm}^2</math></p> <p>Area of trapezoid = <math>40 + 10</math></p> <p>Area of trapezoid = <math>50 \text{ cm}^2</math></p>	6.G.A.1
4	<p>Calculate the area of the isosceles trapezoid.</p> 	<p><math>116 \text{ cm}^2</math></p> <p>Decomposing the trapezoid into 2 equal triangles and 1 rectangle.</p> <p>Area of the triangles = <math>\frac{1}{2} \times 4 \times 9</math></p> <p>Area of triangle = <math>18 \text{ cm}^2</math></p> <p>Area of both triangles = <math>2 \times 18</math></p> <p>Area of both triangles = <math>36 \text{ cm}^2</math></p> <p>Area of rectangle = <math>4 \times 20</math></p> <p>Area of rectangle = <math>80 \text{ cm}^2</math></p> <p>Area of trapezoid = <math>36 + 80</math></p> <p>Area of trapezoid = <math>116 \text{ cm}^2</math></p>	6.G.A.1

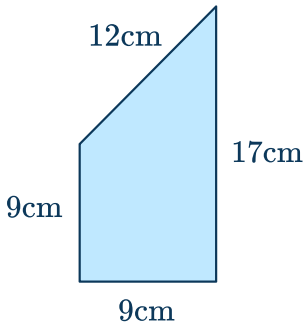
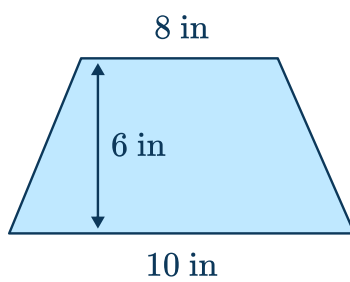
## Area of a Trapezoid Worksheet | Grades 6 to 8 | Answers

Question number	Question	Answers	Standard
5	<p>The area of an isosceles trapezoid is <math>98\text{ m}^2</math>. The height of the trapezoid is <math>4\text{ m}</math> and one of the bases is <math>30\text{ m}</math>. What is the length of the second base?</p>	<p><math>19\text{ m}</math> is the length of the other base.</p> <p>Using the formula for the area of a trapezoid, substitute in the values that are known.</p> $A = \frac{1}{2} \times h \times (\text{base1} + \text{base2})$ $98 = \frac{1}{2} \times 4 \times (30 + x)$ $98 = 2(30 + x)$ $98 = 60 + 2x$ $38 = 2x$ $19 = x$	7.G.B.6
6	<p>Val's garden is in the shape of a trapezoid. She wants to spread soil in her new garden. How many square feet of soil will she need?</p> <div style="text-align: center;">  </div>	<p>Val is going to need <math>24\text{ ft}^2</math> of soil.</p> <p>Using the formula to find the area of a trapezoid or decompose the trapezoid into a rectangle and a triangle.</p> $\text{Area} = \frac{1}{2} \times 8 \times (2 + 4)$ $\text{Area} = 4 \times (6)$	7.G.B.6

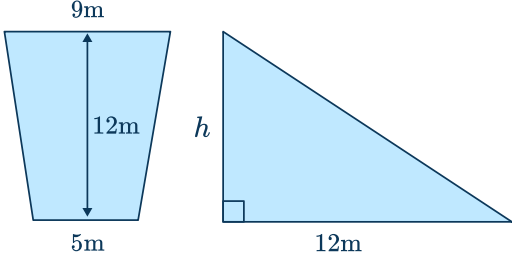
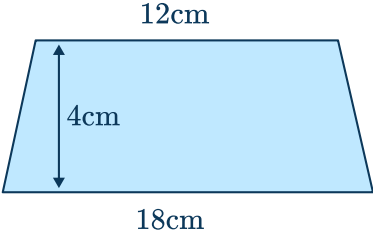
## Area of a Trapezoid Worksheet | Grades 6 to 8 | Answers

Question number	Question	Answers	Standard
7	<p>Find the area of the trapezoid.</p> 	<p>Area = <math>21.4 \text{ in}^2</math>            Decompose the trapezoid into two triangles and a rectangle, or use the area of the trapezoid formula.            Area of trapezoid = <math>\frac{1}{2} \times 4 \times (4.2 + 6.5)</math>            Area of trapezoid = <math>2(10.7)</math>            Area of trapezoid = <math>21.4 \text{ in}^2</math></p>	7.G.B.6
8	<p>The top of an end table is in the shape of a trapezoid. Find the area of the top of the end table.</p> 	<p>Area = <math>990 \text{ in}^2</math>            The area of the isosceles triangle can be found by decomposing the trapezoid into 2 triangles and a rectangle.            Area of triangle = <math>\frac{1}{2} \times 30 \times 5</math>            Area of triangle = <math>15 \times 5</math>            Area of triangle = <math>75 \text{ in}^2</math>            Area of both triangles = <math>2 \times 75</math>            Area of both triangles = <math>150 \text{ in}^2</math>            Area of rectangle = <math>30 \times 28</math>            Area of rectangle = <math>840 \text{ in}^2</math>            Area of trapezoid = <math>840 + 150</math>            Area of trapezoid = <math>990 \text{ in}^2</math></p>	6.G.A.1 7.G.B.6

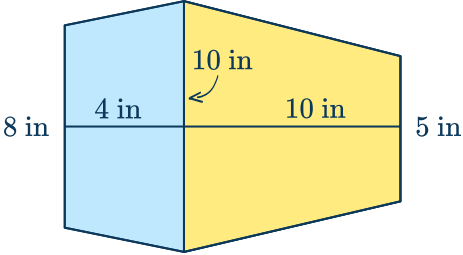
## Area of a Trapezoid Worksheet | Grades 6 to 8 | Answers

Question number	Question	Answers	Standard
9	<p>Find the area of the trapezoid.</p> 	<p>Area = <math>117 \text{ cm}^2</math></p> <p>To find the area decompose the trapezoid or use the formula to find the area of a trapezoid.</p> <p>Area = <math>\frac{1}{2} \times 9 \times (9 + 17)</math>            Area = <math>\frac{1}{2} \times 9 \times 26</math>            Area = <math>117 \text{ cm}^2</math></p>	<p>6.G.A.1 7.G.B.6</p>
10	<p>If a trapezoid has an area of <math>192 \text{ ft}^2</math> and base lengths of 15 ft and 17 ft, find the height of the trapezoid.</p>	<p>The height of the trapezoid is 12 ft. Using the formula for the area of a trapezoid, substitute in the values that are known.</p> <p><math>A = \frac{1}{2} \times h \times (\text{base1} + \text{base2})</math>  <math>192 = \frac{1}{2} \times h \times (15 + 17)</math>  <math>192 = \frac{1}{2} \times h \times (32)</math>  <math>192 = 16 \times h</math>  <math>12 = h</math>            height = 12 inches</p>	<p>7.G.B.6</p>
11	<p>Sketch a trapezoid and label the dimensions that have an area of <math>54 \text{ in}^2</math>.</p>	<p>Answers will vary.</p> <p>Example answer:</p> 	<p>6.G.A.1 7.G.B.6</p>

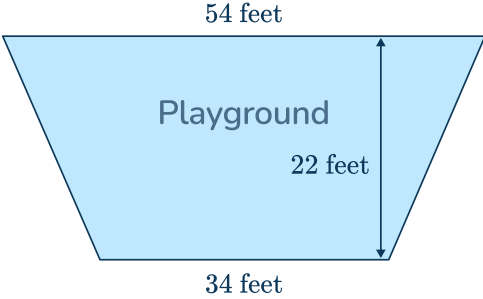
## Area of a Trapezoid Worksheet | Grades 6 to 8 | Answers

Question number	Question	Answers	Standard
12	<p>Albert says the area of the triangle is larger than the area of the trapezoid. If that is true, what can the height of the triangle be?</p> 	<p>Answer vary:</p> <p>The height has to be greater than 14 because <math>\frac{14 \times 12}{2} = 84</math>. In order for the triangle area to be greater than the trapezium height has to be greater than 14.</p>	<p>6.G.A.1 7.G.B.6</p>
13	<p>Dillion and Brenda are doing their homework. They have to find the area of the trapezoid below.</p>  <ul style="list-style-type: none"> <li>• Brenda says that she found the area by adding 12 and 18 together and then multiplying that sum to 2.</li> <li>• Dillion says that he found the area by multiplying <math>2 \times 3</math>, doubling it, and then adding it to 48.</li> </ul> <p>Describe if Brenda and Dillion are using a correct strategy.</p>	<p>Area of the trapezoid is <math>60 \text{ cm}^2</math></p> <p>Brenda adds the bases of the trapezoid together which is <math>12 + 18 = 30</math>. She then multiplies it to 2, so <math>2 \times 30 = 60</math>. She took <math>\frac{1}{2}</math> of the height which is 2 so Brenda used the area of the trapezoid to find the area.</p> <p>Dillion decomposed the trapezoid into two triangles and a rectangle. The area of one triangle is <math>\frac{1}{2} \times 4 \times 3</math> which is 6. Since there are 2 triangles that are the same, doubling 6 is correct. Then add the area of the rectangle, which is <math>48 + 12 = 60</math>. They both use good strategies.</p>	7.G.B.6

## Area of a Trapezoid Worksheet | Grades 6 to 8 | Answers

Question number	Question	Answers	Standard
14	<p>Randy is making a trapezoid shaped design that looks like the figure below. Find the area of the design.</p> 	<p>Area of the design is <math>111 \text{ in}^2</math></p> <p>Find the area of the two trapezoids and add them together.</p> <p>Area of trapezoid = <math>\frac{1}{2} \times 4 \times (10 + 8)</math>            Area of trapezoid = <math>2(18)</math>            Area of trapezoid = <math>36 \text{ in}^2</math></p> <p>Area of trapezoid = <math>\frac{1}{2} \times 10 \times (5+10)</math>            Area of trapezoid = <math>5(15)</math>            Area of trapezoid = <math>75 \text{ in}^2</math></p> <p>Add: <math>36 + 75 = 111 \text{ in}^2</math></p>	7.G.B.6

## Area of a Trapezoid Worksheet | Grades 6 to 8 | Answers




Question number	Question	Answers	Standard
15	<p>The Main Street Elementary School is updating their playground which is in the shape of a trapezoid. The building supervisor wants to lay mulch on the playground to prevent injuries. If the mulch costs \$10.50 for 30 square feet, how much money will it cost to cover the playground with mulch?</p> 	<p>The cost for the mulch is \$338.80</p> <p>Area of trapezoid = <math>\frac{1}{2} \times 22 \times (54+34)</math>            Area of trapezoid = <math>11 \times (88)</math>            Area of trapezoid = <math>968 \text{ ft}^2</math></p> <p>If it costs \$10.50 for 30 square feet, then it costs \$0.35 per square foot.  <math>10.50 \div 30 = 0.35</math></p> <p>So, to find the total cost multiply,  <math>0.35 \times 968 = 338.80</math></p> <p>\$338.80</p>	7.G.B.6

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