

Reasoning and Problem Solving

Step 3: Area of a Triangle 1

National Curriculum Objectives:

Mathematics Year 6: (6M7b) [Calculate the area of parallelograms and triangles](#)

Differentiation:

Questions 1, 4 and 7 (Problem Solving)

Developing Create a question about the area of two different triangles, where the squares measure 1cm^2 and part squares are always worth a half.

Expected Create three questions about the area of three different triangles, where the squares measure 1cm^2 .

Greater Depth Create three questions about the area of three different triangles they have drawn, where the squares measure 2cm^2 or 3cm^2 .

Questions 2, 5 and 8 (Reasoning)

Developing Agree or disagree with given estimations of two different triangles, where the squares measure 1cm^2 and part squares are always worth a half.

Expected Agree or disagree with given estimations of three different triangles, where the squares measure 1cm^2 .

Greater Depth Agree or disagree with given estimations of three different triangles, where the squares measure 2cm^2 or 3cm^2 .

Questions 3, 6 and 9 (Problem Solving)

Developing Draw a right-angled triangle on squared paper where the squares measure 1cm^2 with a specified area of 6cm^2 or less.

Expected Draw triangles on squared paper where the squares measure 1cm^2 with a specified area.

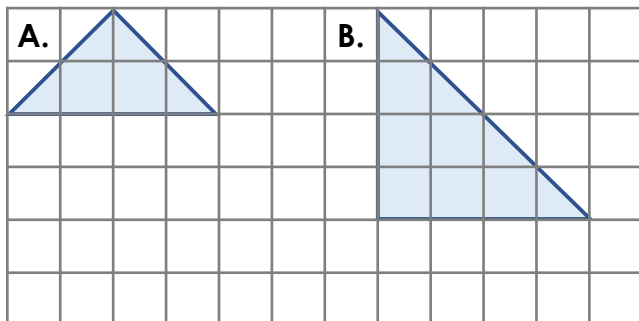
Greater Depth Draw triangles on squared paper where the squares represent 2cm^2 or 3cm^2 with a specified area and one specified length.

More [Year 6 Perimeter, Area and Volume](#) resources.

Did you like this resource? Don't forget to [review](#) it on our website.

Area of a Triangle 1

1a. Here are two triangles. Each square equals 1cm^2 .



Create a question about the area of the triangles. Remember to include the answer.

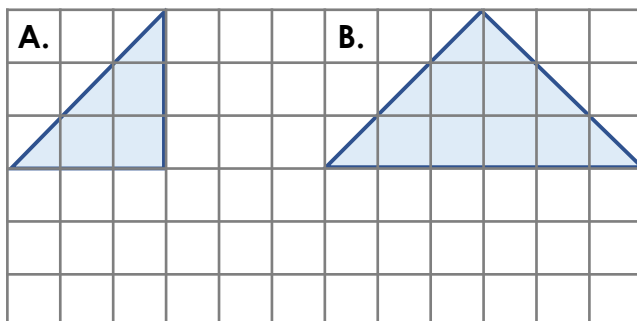


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Area of a Triangle 1

1b. Here are two triangles. Each square equals 1cm^2 .



Create a question about the area of the triangles. Remember to include the answer.

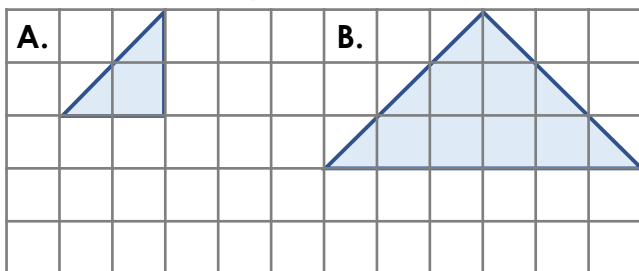


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2a. Ben has estimated the area of these triangles by counting the squares.

1 square = 1cm^2



A = 1cm^2

B = 9cm^2

Do you agree with his estimations? Explain why.

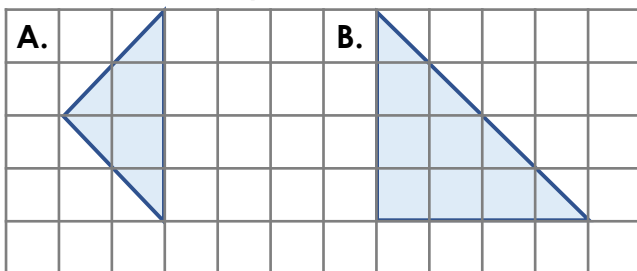


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2b. Sadia has estimated the area of these triangles by counting the squares.

1 square = 1cm^2



A = 4cm^2

B = 10cm^2

Do you agree with her estimations? Explain why.



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3a. Kelly is drawing a right-angled triangle.

She says,



My triangle has an area of 4cm^2 .

Use squared paper to draw a triangle with the same area as Kelly's.



PS

3b. Harry is drawing a right-angled triangle.

He says,



My triangle has an area of 6cm^2 .

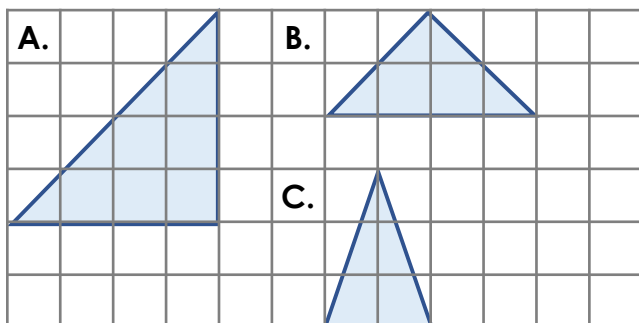
Use squared paper to draw a triangle with the same area as Harry's.



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Area of a Triangle 1

4a. Here are three triangles. Each square equals 1cm^2 .



Create three questions about the area of the triangles. Remember to include answers.

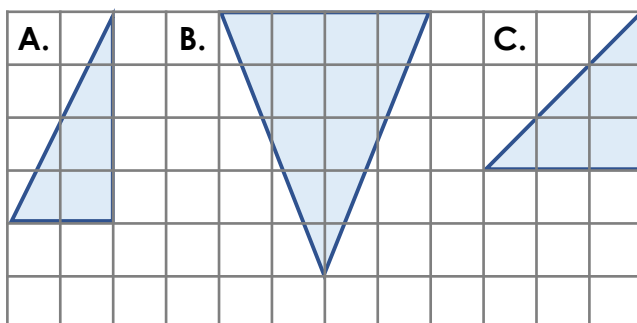


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Area of a Triangle 1

4b. Here are three triangles. Each square equals 1cm^2 .



Create three questions about the area of the triangles. Remember to include answers.

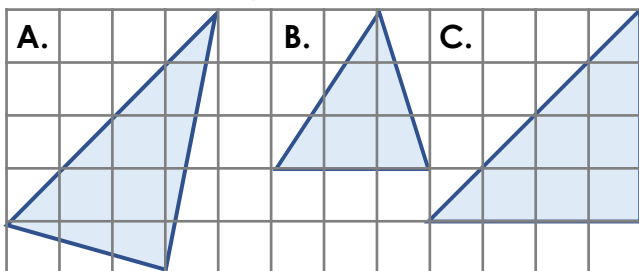


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PS

5a. Jude has estimated the area of these triangles by counting the squares.

1 square = 1cm^2



A = 10cm^2

B = 4.5cm^2

C = 6cm^2

Do you agree with his estimations? Explain why.

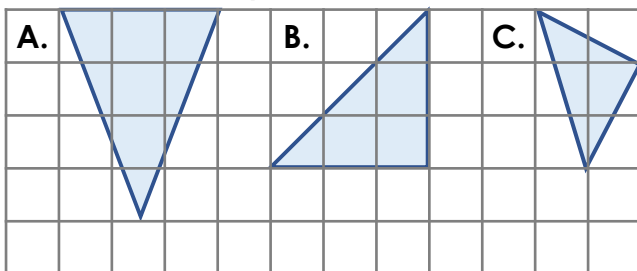


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5b. Ellie has estimated the area of these triangles by counting the squares.

1 square = 1cm^2



A = 6.5cm^2

B = 4.5cm^2

C = 3cm^2

Do you agree with her estimations? Explain why.



Not to scale

R

6a. Adela is drawing a triangle.

She says,



My triangle has an area of 12cm^2 .

Use squared paper to draw triangles with the same area as Adela's.



PS

6b. Imran is drawing a triangle.

He says,



My triangle has an area of 16cm^2 .

Use squared paper to draw triangles with the same area as Imran's.



PS

Area of a Triangle 1

Area of a Triangle 1

7a. Use squared paper to draw 3 triangles which each have a different area.

Imagine each square is worth 2cm^2 .

Create three questions about the area of the triangles.

Remember to include answers.



PS

7b. Use squared paper to draw 3 triangles where 2 have the same area.

Imagine each square is worth 3cm^2 .

Create three questions about the area of the triangles.

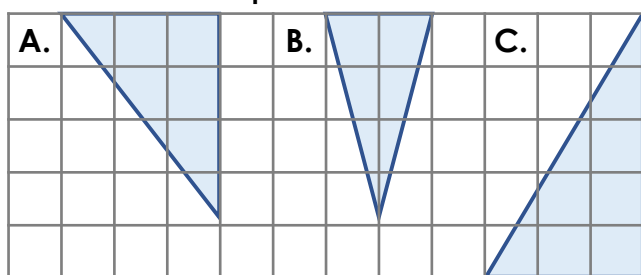
Remember to include answers.



PS

8a. Ali has estimated the area of these triangles by counting the squares.

1 square = 3cm^2



A = 6cm^2

B = 4cm^2

C = 7.5cm^2

Do you agree with his estimations?
Explain why.

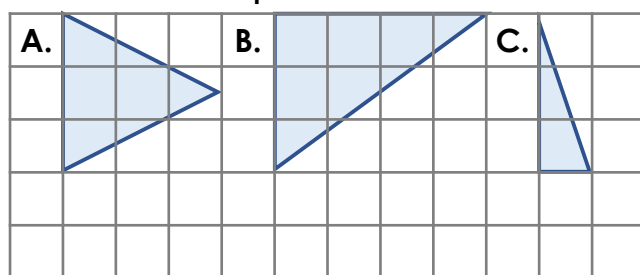


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8b. Lily has estimated the area of these triangles by counting the squares.

1 square = 2cm^2



A = 13.5cm^2

B = 18cm^2

C = 4.5cm^2

Do you agree with her estimations?
Explain why.



Not to scale

R

9a. Bella is drawing a triangle.

She says,



My triangle has an area of 18cm^2 . One of its sides is 12cm long.

Use squared paper to draw triangles with the same properties as Bella's. Imagine each square is worth 2cm^2 .



PS

9b. Alfie is drawing a triangle.

He says,



My triangle has an area of 30cm^2 . One of its sides is 15cm long.

Use squared paper to draw triangles with the same properties as Alfie's. Imagine each square is worth 3cm^2 .



PS

Reasoning and Problem Solving

Area of a Triangle 1

Developing

- 1a. Various answers, for example:
Which triangle has the smallest area? (A)
- 2a. Various answers, for example:
No because although he has estimated triangle B correctly, he has only counted one square for triangle A, despite there being more than 1.
- 3a. Accept any right-angled triangle, with an accurate area of 4cm^2 .

Expected

- 4a. Various answers, for example:
Which triangle has the largest area? (A); Order the triangles from the smallest area to the largest. (C, B, A); What similarities and differences do you notice about the triangles? (B and C are right-angled triangles, A is an isosceles triangle)
- 5a. Various answers, for example:
No because although he has estimated triangle A and B correctly, his estimation for triangle C is too low; it has an area closer to 8cm^2 , not 6cm^2 .
- 6a. Accept any triangles with an accurate area of 12cm^2 .

Greater Depth

- 7a. All triangles must have a different area. Three questions with an answer.
- 8a. Various answers, for example:
No because he has not multiplied the total squares by 3; they need to be multiplied because each square is worth 3cm^2 , not 1cm^2 . His estimations should be:
 $A = 18\text{cm}^2$, $B = 12\text{cm}^2$, $C = 22.5\text{cm}^2$.
- 9a. Accept any triangles with at least one side which is 12cm long, and an accurate area of 12cm^2 (where each square represents 2cm^2).

Reasoning and Problem Solving

Area of a Triangle 1

Developing

- 1b. Various answers, for example:
What is the difference between the area of the triangles? (4.5cm^2)
- 2b. Various answers, for example:
No because although she has estimated triangle A correctly, her estimation for triangle B is too high; it has an area closer to 8cm^2 , not 10cm^2 .
- 3b. Accept any right-angled triangle, with an accurate area of 6cm^2 .

Expected

- 4b. Various answers, for example:
Which triangle has an area of 4.5cm^2 ? (C); What is the difference in area between triangle A and triangle B? (6cm^2); What is the total area of all three triangles? (18.5cm^2)
- 5b. Various answers, for example:
I agree with Ellie's estimations because all of her estimations are either correct, or close to being correct; triangle A has an actual area of 6cm^2 , so her estimation is only 0.5cm^2 over.
- 6b. Accept any triangles with an accurate area of 16cm^2 .

Greater Depth

- 7b. All triangles must have a different area. Three questions with an answer.
- 8b. Various answers, for example:
No because she has multiplied the total squares by 3 instead of 2; each square is worth 2cm^2 , not 3cm^2 . Her estimations should be: $A = 9\text{cm}^2$, $B = 12\text{cm}^2$, $C = 3\text{cm}^2$.
- 9b. Accept any triangles with at least one side which is 15cm long, and an accurate area of 30cm^2 (where each square represents 3cm^2).