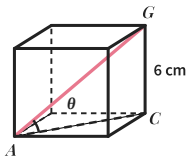
Pythagoras and trigonometry in 3D

1

The diagonal of the base AC is 8 cm.
Find the angle θ between AG and the base.
Give your answer to 1 decimal place.



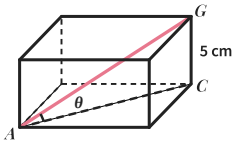
$\tan\theta =$ 6 ÷ 8

$\theta =$

Answer _____

2

The diagonal of the base AC is 12 cm.
Find the angle θ between AG and the base.
Give your answer to 1 decimal place.



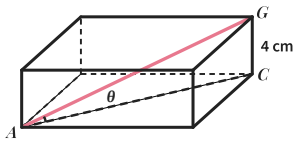
$\tan\theta =$ ÷

$\theta =$

Answer _____

3

The diagonal of the base AC is 15 cm.
Find the angle θ between AG and the base.
Give your answer to 1 decimal place.

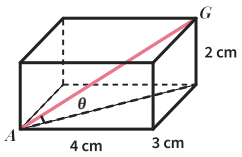


$\theta =$

Answer _____

4

Find the angle θ between the diagonal AG and the base $ABCD$. Give your answer to 1 decimal place.



$AC^2 =$ $4^2 + 3^2$ $=$ 25

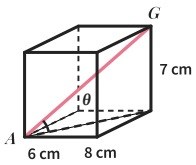
$AC =$ 5 cm

$\tan\theta =$ ÷ $\theta =$

Answer _____

5

Find the angle θ between the diagonal AG and the base $ABCD$. Give your answer to 1 decimal place.



$AC^2 =$ $6^2 + 8^2$ $=$ 100

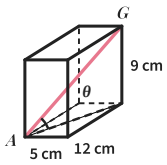
$AC =$ cm

$\tan\theta =$ ÷ $\theta =$

Answer _____

6

Find the angle θ between the diagonal AG and the base $ABCD$. Give your answer to 1 decimal place.



$AC^2 =$ $=$

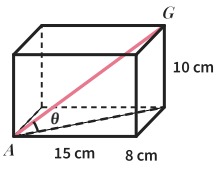
$AC =$ cm

$\tan\theta =$ ÷ $\theta =$

Answer _____

7

Find the angle θ between the diagonal AG and the base $ABCD$. Give your answer to 1 decimal place.

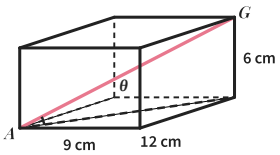


$\tan\theta =$ ÷ $\theta =$

Answer _____

8

A cuboid is 9 cm by 12 cm by 6 cm tall.
Mia says the angle between AG and the base is $\tan^{-1}(6 \div 12) = 26.6°$. Explain her mistake and find the angle.

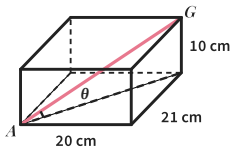


Answer _____

Pythagoras and trigonometry in 3D *further practice*

9

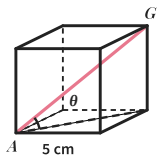
Find the angle θ between the diagonal AG and the base $ABCD$. Give your answer to 1 decimal place.



Answer _____

10

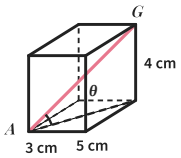
A cube has edges of 5 cm. Find the angle θ between the diagonal AG and the base.



Answer _____

11

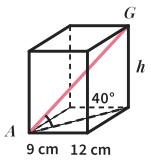
Find the angle θ between the diagonal AG and the base $ABCD$. Give your answer to 1 decimal place.



Answer _____

12

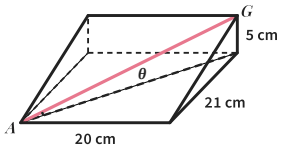
The diagonal AG makes an angle of 40° with the base. Find the height h.



Answer _____

13

A ramp has a rectangular base 20 cm by 21 cm. The back edge is 5 cm high.
Find the angle θ between AG and the base.



Answer _____

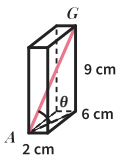
14

A shoebox is 30 cm long, 16 cm wide and 12 cm tall. A straw rests from a bottom corner to the opposite top corner.
Find the angle the straw makes with the bottom of the box.

Answer _____

15

Find the length of AG and the angle θ it makes with the base.



Answer _____

16

Two boxes have the same base. Box B is taller than box A. Is the angle between AG and the base bigger in box B? Explain.

Answer _____