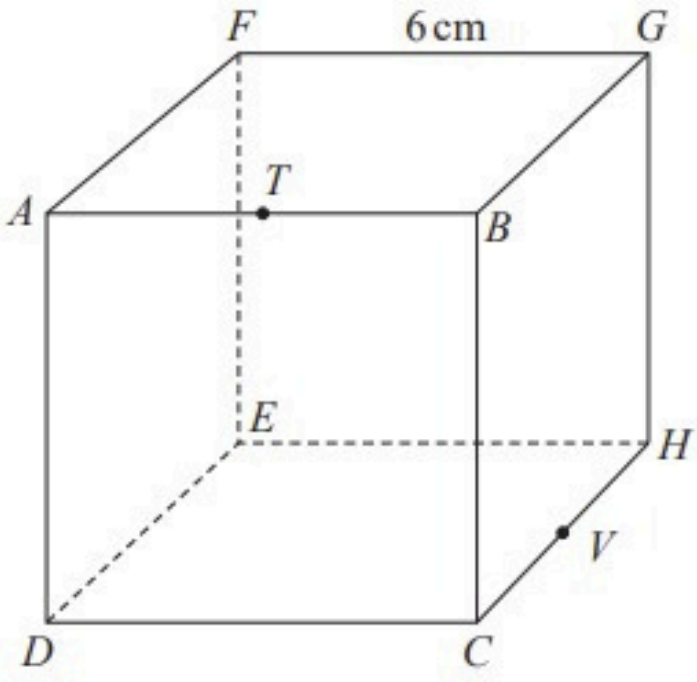
EDEXCEL IGCSE MATHEMATICS

UNIT 1 (MODULAR)

GEOMETRY – 3D PYTHAGORAS

QP & MS (2018 - 2025)



COMPILED BY:
SIR MUHAMMAD ABDULLAH SHAH

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EDEXCEL IGCSE MATHEMATICS MODULAR FOR MAY & OCT 2026

by Sir Muhammad Abdullah Shah

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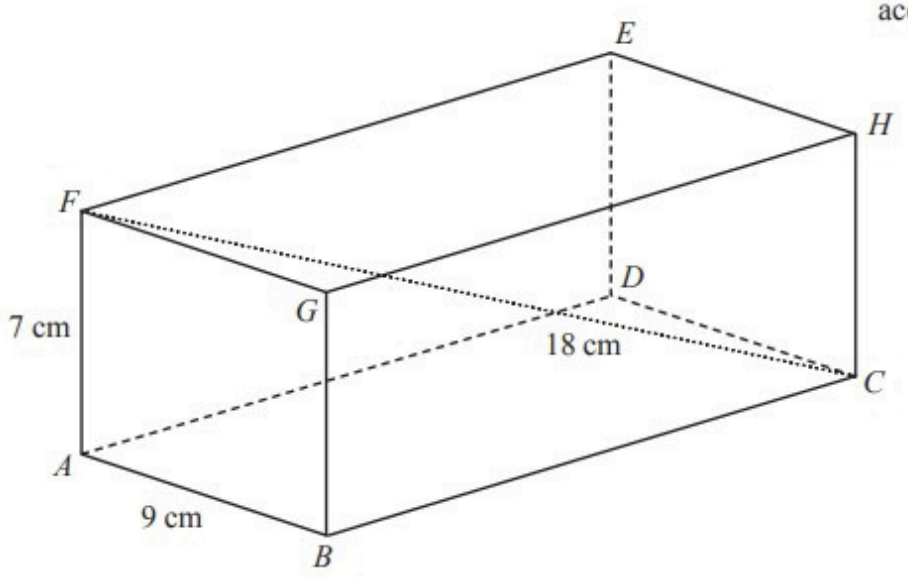
1. June 2025 1HR/Q20

The diagram shows cuboid *ABCDEFGH*

Diagram **NOT** accurately drawn



$AB = 9\,\text{cm}$ $AF = 7\,\text{cm}$ $FC = 18\,\text{cm}$

Calculate the length of BC
Give your answer correct to 3 significant figures.

..... cm

(Total for Question 20 is 3 marks)

2. June 2022 1HR/Q18

The diagram shows a cube $ABCDEFGH$ with sides of length 6 cm.

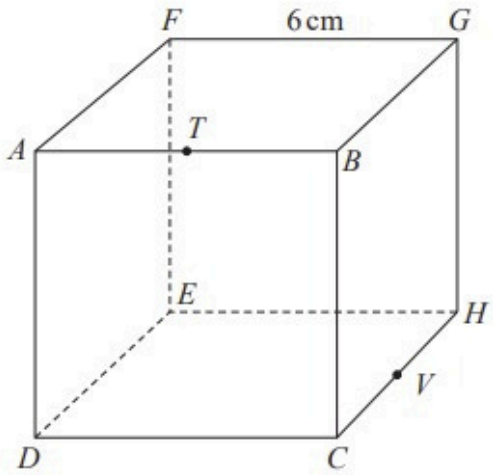


Diagram **NOT** accurately drawn

T is the midpoint of AB and V is the midpoint of CH

Work out the distance from T to V in a straight line through the cube.
Give your answer in the form $\sqrt{a}$ cm where a is an integer.

..... cm

(Total for Question 18 is 4 marks)

3. Nov 2020 1HR/Q17

The diagram shows a prism *ABCDEFGH* with a horizontal base.

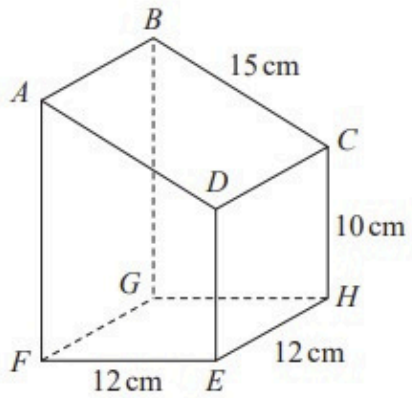


Diagram **NOT** accurately drawn

The base of the prism, *EFGH*, is a square of side 12 cm.
Trapezium *ADEF* is a cross section of the prism where *AF* and *DE* are vertical edges.

$DE = CH = 10$ cm
$AD = BC = 15$ cm

(a) Work out the size of the angle between *CF* and the base *EFGH*.
Give your answer correct to one decimal place.

..... °

(3)

(b) Work out the length of *BE*.
Give your answer correct to one decimal place.

..... cm

(3)

(Total for Question 17 is 6 marks)

EDEXCEL IGCSE MATHEMATICS MODULAR UNIT 1 – 3D PYTHAGORAS
COMPILED BY SIR MUHAMMAD ABDULLAH SHAH
MARKING SCHEME

1. June 2025 1HR/Q20

20	eg $(AC^2 =)18^2 - 7^2 (= 275)$ **or** $(AC =)\sqrt{18^2 - 7^2} (= \sqrt{275}$ or $5\sqrt{11}$ or $16.5(831...))$ **or** $(FB^2 =)9^2 + 7^2 (= 130)$ **or** $(FB =)\sqrt{9^2 + 7^2} (= \sqrt{130}$ or $11.4(017...))$ **or** $(GC^2 =)18^2 - 9^2 (= 243)$ **or** $(GC =)\sqrt{18^2 - 9^2} (= \sqrt{243}$ or $9\sqrt{3}$ or $15.5(884...))$ **or** $18^2 = (BC)^2 + 7^2 + 9^2$ oe		3	M1	for method to find AC^2 **or** AC **or** FB^2 **or** FB **or** GC^2 **or** GC **or** for a correct equation using BC^2 and 18 and 7 and 9 other longer ways to find AC, FB, GC may be used but must be a complete method eg $\angle FCA = \sin^{-1}\left(\frac{7}{18}\right) (= 22.88...)$ **and** $AC = \frac{7}{\tan "22.88..."}$
	eg $"275" - 9^2 (= 194)$ **or** $"16.5..."^2 - 9^2 (= 194)$ **or** $18^2 - "130" (= 194)$ **or** $18^2 - "11.4..."^2 (= 194)$ $"243" - 7^2 (= 194)$ **or** $"15.5..."^2 - 7^2 (= 194)$ **or** $18^2 - 7^2 - 9^2 (= 194)$ **or** $\angle FCB = \sin^{-1}\left(\frac{"11.4"}{18}\right) (= 39.3(036...))$ **and** $\cos "39.3" = \frac{(BC)}{18}$ or $\tan "39.3" = \frac{"11.4"}{(BC)}$ oe			M1	for complete method to find BC^2 other longer ways to find BC may be used but must be a complete method, leading to a trig equation in BC
	Correct answer scores full marks (unless from obvious incorrect working)	13.9		A1	accept 13.8 to 14
					Total 3 marks

2. June 2022 1HR/Q18

18	eg $(BV^2 =)3^2 + 6^2 (= 45)$ **or** $(CT^2 =)3^2 + 6^2 (= 45)$ **or** $(DH^2 =) 6^2 + 6^2 (= 72)$ **or** $(MV^2 =)3^2 + 3^2 (= 18)$		4	M1	a correct expression for eg BV^2 **or** CT^2 **or** DH^2 **or** MV^2 where M is the midpoint of DC **or** a correct expression for [length]^2 for any length in the cube using Pythagoras	M3 for $(VT =)\sqrt{6^2 + 3^2 + 3^2}$ $(= 3\sqrt{6}$ or $7.34...)$ (M2 for $(VT^2 =)$ $6^2 + 3^2 + 3^2 (= 54)$)
	eg $(BV =)\sqrt{3^2 + 6^2} \left(= \sqrt{45}$ or $3\sqrt{5}$ or $6.70...\right)$ **or** $(CT =)\sqrt{3^2 + 6^2} \left(= \sqrt{45}$ or $3\sqrt{5}$ or $6.70...\right)$ **or** $(DH =)\sqrt{6^2 + 6^2} \left(= \sqrt{72}$ or $6\sqrt{2}$ or $8.48...\right)$ **or** $(MV =)\sqrt{3^2 + 3^2} \left(= \sqrt{18}$ or $3\sqrt{2}$ or $4.24...\right)$			M1	for a complete method for eg BV **or** CT **or** DH **or** MV **or** any length in the cube using Pythagoras	
	$(VT =)\ \sqrt{"45" + 3^2}$ **or** $\sqrt{\left(\frac{"\sqrt{72}"}{2}\right)^2 + 6^2}$ **or** $\sqrt{"18" + 6^2}$ **or** $3\sqrt{6}$ **or** $7.34...$			M1	for a correct expression for VT (condone missing brackets around $3\sqrt{5}$ or $3\sqrt{2}$ or $\frac{\sqrt{72}}{2}$)	
		$\sqrt{54}$		A1	if $\sqrt{54}$ seen and answer then given as $3\sqrt{6}$ isw and award full marks	
						Total 4 marks

3. Nov 2020 1HR/Q17

17 (a)	$(FH=)\ \sqrt{12^2+12^2}\ (=16.97\ldots \text{ or } \sqrt{288} \text{ or } 12\sqrt{2})$		3	M1	
	$\tan CFH = \frac{10}{"16.97..."}$ oe **or** e.g. $(CF=)\ \sqrt{"16.97"^2+10^2}\ (=19.69\ldots \text{ or } \sqrt{388} \text{ or } 2\sqrt{97})$ **and** e.g. $\frac{\sin CFH}{10} = \frac{\sin 90}{"19.69"}$			M1	for a correct trig statement involving *CFH*
		30.5		A1	accept 30.4 – 30.7
(b)	$(BG=)\ 10+\sqrt{15^2-12^2}\ (=19)$		3	M1	
	$(BE=)\ \sqrt{"19"^2+"16.97..."^2}$ oe			M1	ft their *FH*
		25.5		A1	accept 25.4 – 25.6
					Total 6 marks