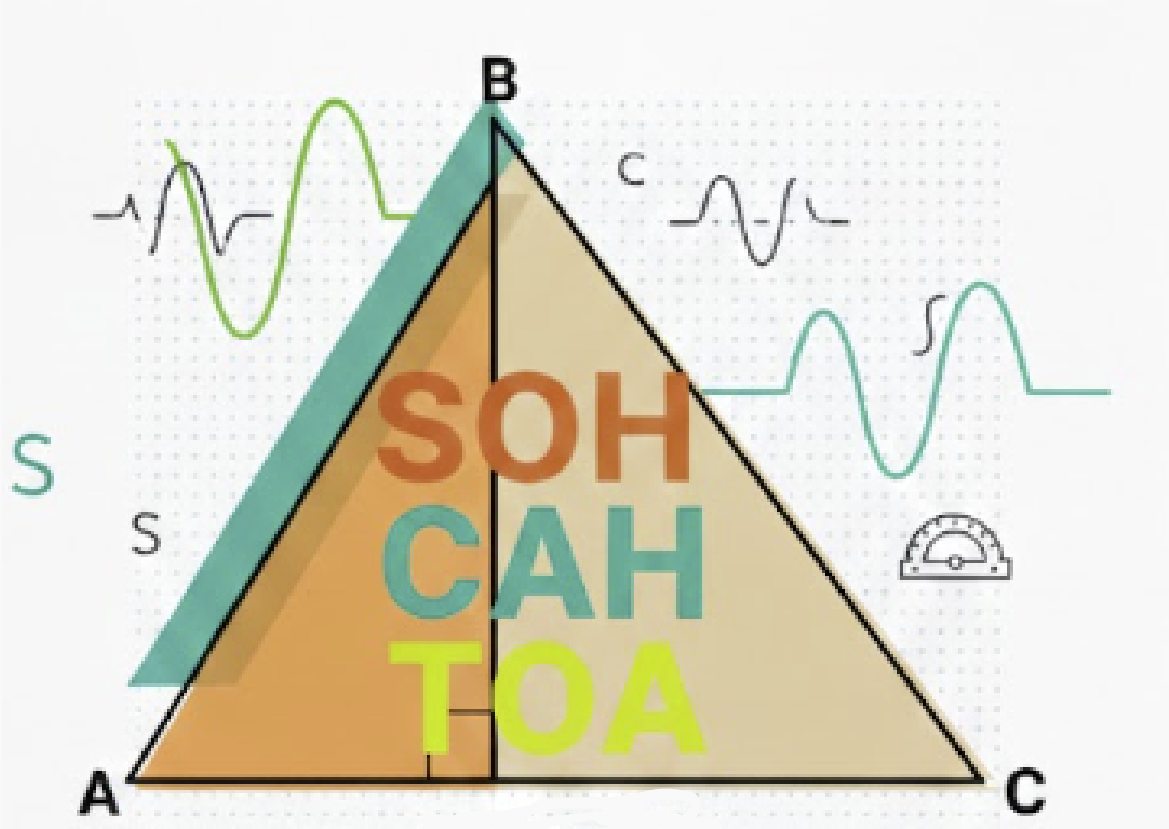
EDEXCEL IGCSE MATHEMATICS

UNIT 1 (MODULAR)

GEOMETRY – TRIGONOMETRY

QP & MS (2018 - 2025)



COMPILED BY:
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EDEXCEL IGCSE MATHEMATICS MODULAR FOR MAY & OCT 2026

by Sir Muhammad Abdullah Shah

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1. Nov 2025 1H/Q11

ABC is a right-angled triangle.

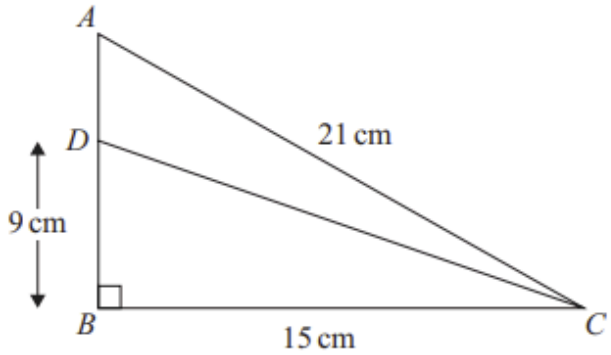


Diagram **NOT** accurately drawn

$AC = 21$ cm $BC = 15$ cm angle $ABC = 90°$

The point D lies on AB such that $DB = 9$ cm

Work out the size of angle ACD
Give your answer correct to one decimal place.

.....

(Total for Question 11 is 4 marks)

2. June 2025 1H/Q9

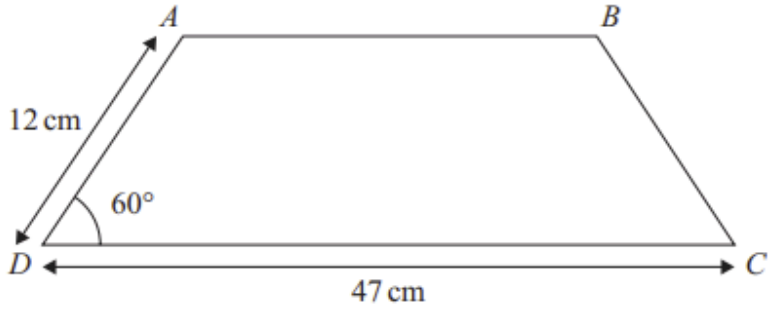


Diagram **NOT** accurately drawn

ABCD is a trapezium with one line of symmetry.

angle $ADC = 60°$ $AD = 12\,\text{cm}$ $DC = 47\,\text{cm}$

Work out the area of the trapezium.
Give your answer correct to 3 significant figures.
Show your working clearly.

..... cm^2

(Total for Question 9 is 5 marks)

3. Nov 2024 1H/Q12

ABC is a right-angled triangle.
D is a point on BC

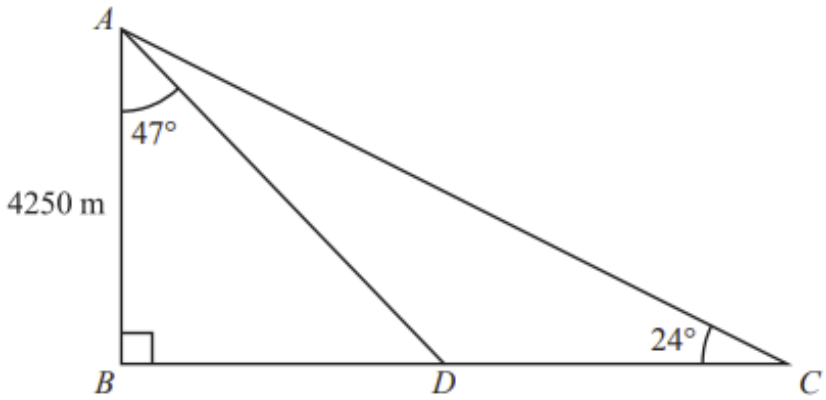


Diagram **NOT** accurately drawn

$AB = 4250$ m angle $BAD = 47°$ angle $BCA = 24°$

Work out the length of DC
Give your answer correct to the nearest integer.

..... m

(Total for Question 12 is 4 marks)

6. Nov 2023 1H/Q10

Here is triangle ABC

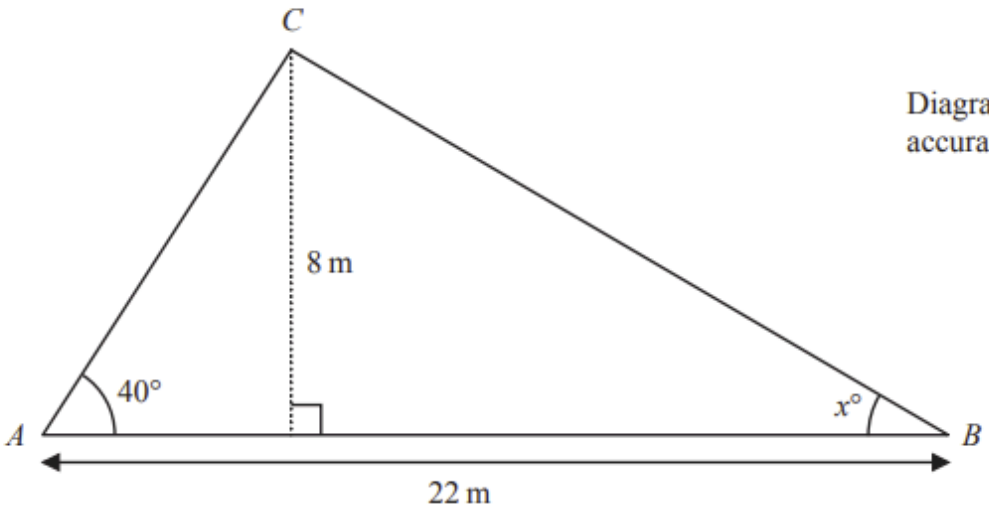


Diagram **NOT** accurately drawn

Work out the value of x
Give your answer correct to one decimal place.
Show your working clearly.

$x =$ .....

(Total for Question 10 is 5 marks)

7. Jan 2023 1H/Q16

Here is a shape formed from two triangles ABC and CDE
ACD and BCE are straight lines.

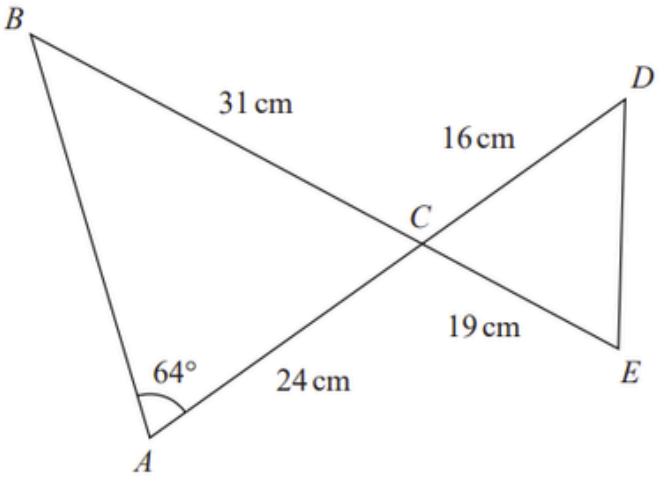


Diagram **NOT** accurately drawn

$AC = 24\,\text{cm}$ $BC = 31\,\text{cm}$ $CE = 19\,\text{cm}$ $CD = 16\,\text{cm}$

Angle $BAC = 64°$

Work out the length of DE
Give your answer correct to 3 significant figures.

..... cm

(Total for Question 16 is 5 marks)

8. June 2022 1H/Q18

Here is triangle ABC

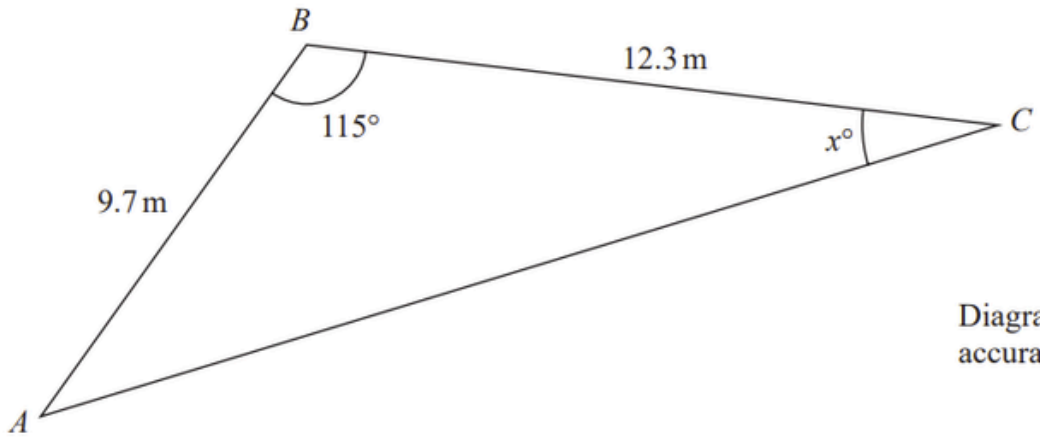


Diagram **NOT** accurately drawn

Work out the value of x
Give your answer correct to 3 significant figures.

$x =$ .....

(Total for Question 18 is 5 marks)

9. Jan 2022 1H/Q3

The diagram shows triangle ABC

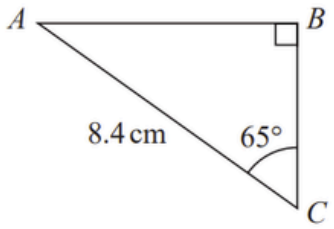


Diagram **NOT** accurately drawn

Work out the length of the side AB
Give your answer correct to 3 significant figures.

..... cm

(Total for Question 3 is 3 marks)

10. Jan 2021 1H/Q12

The diagram shows a vertical cliff with a vertical radio mast on top of the cliff and a buoy in the sea.

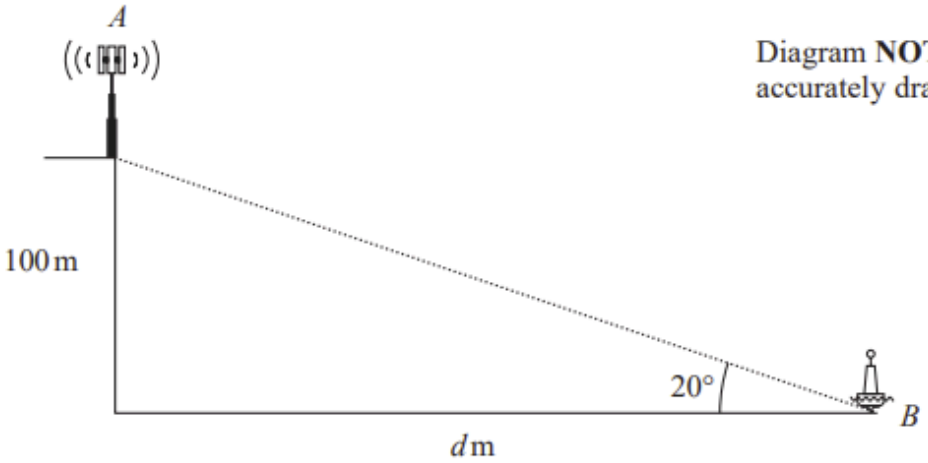


Diagram **NOT** accurately drawn

The height of the cliff is 100 metres.
The buoy is at the point B that is d metres from the base of the cliff.
The angle of elevation from B to the top of the cliff is 20°

(a) Calculate the value of d.
Give your answer correct to 3 significant figures.

$d =$ .....

(3)

The point A at the top of the radio mast is vertically above the top of the cliff.
The angle of elevation from B to A is 25°

(b) Calculate the height of the radio mast.
Give your answer correct to 3 significant figures.

..... m

(3)

(Total for Question 12 is 6 marks)

11. Jan 2021 1H/Q10

Here is isosceles triangle ABC.

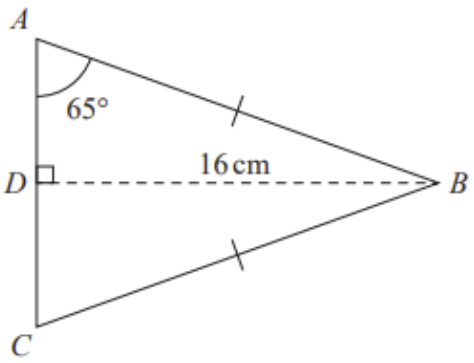


Diagram **NOT** accurately drawn

D is the midpoint of AC and $DB = 16$ cm.

Angle $DAB = 65°$

Work out the perimeter of triangle ABC.
Give your answer correct to one decimal place.

..... cm

(Total for Question 10 is 4 marks)

12. Jan 2020 1H/Q9

Here is a right-angled triangle.

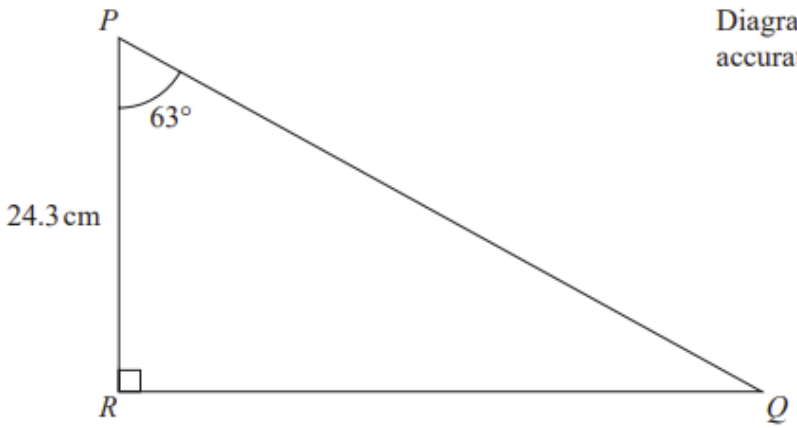


Diagram **NOT** accurately drawn

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

..... cm

(Total for Question 9 is 3 marks)

13. Jan 2020 1HR/Q15

The diagram shows two right-angled triangles, *DEF* and *EFG*.

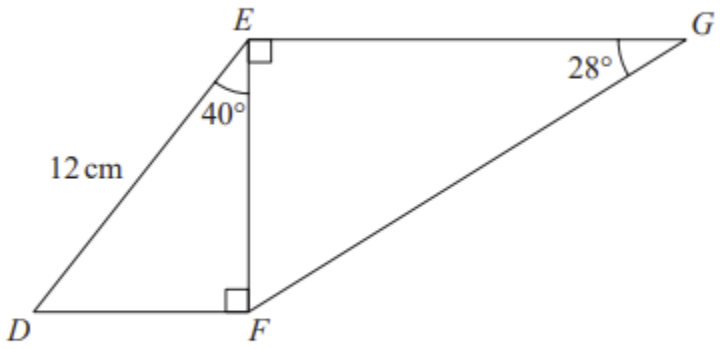


Diagram **NOT** accurately drawn

Work out the length of *EG*.
Give your answer correct to 3 significant figures.

..... cm

(Total for Question 15 is 4 marks)

14. Jan 2020 1HR/Q21

The diagram shows the prism $ABCDEF$ with cross section triangle ABC.

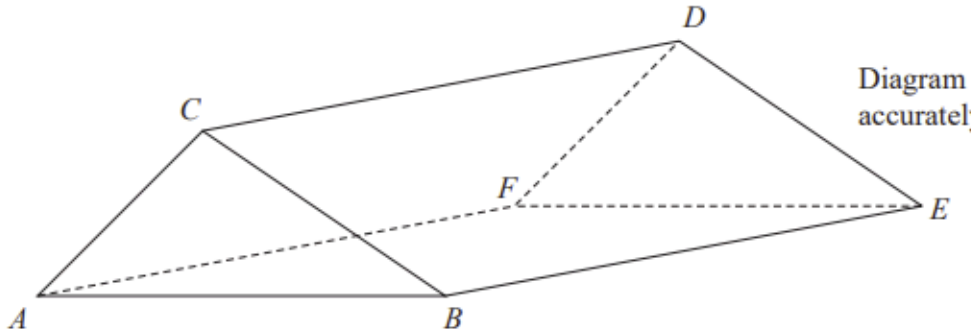


Diagram **NOT** accurately drawn

Angle $BEC = 40°$ and angle ACB is obtuse.
$AC = 6\,\text{cm}$ and $CE = 13\,\text{cm}$

The area of triangle ABC is $22\,\text{cm}^2$

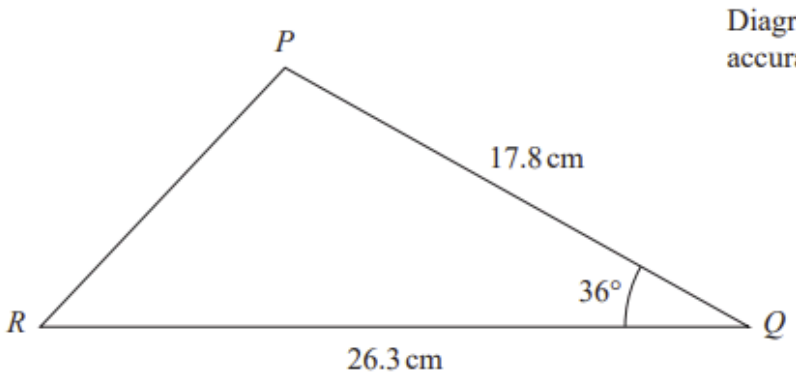
Calculate the length of AB.
Give your answer correct to one decimal place.

..... cm

(Total for Question 21 is 6 marks)

15. June 2019 1H/Q18

The diagram shows triangle PQR.



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

..... cm

(Total for Question 18 is 3 marks)

16. Jan 2019 1H/Q10

Here is triangle ABD.

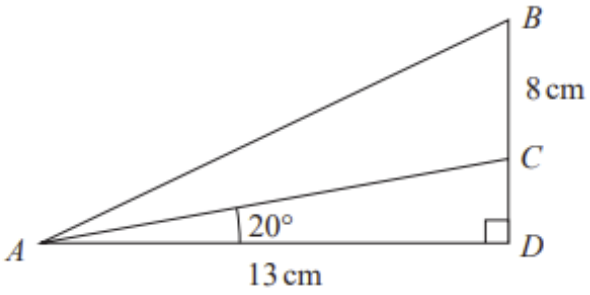


Diagram **NOT** accurately drawn

The point C lies on BD.

$AD = 13\,\text{cm}$ $BC = 8\,\text{cm}$ angle $ADB = 90°$ angle $CAD = 20°$

Calculate the size of angle BAC.
Give your answer correct to 1 decimal place.

(Total for Question 10 is 5 marks)

17. Jan 2019 1H/Q17

Here is triangle ABC.

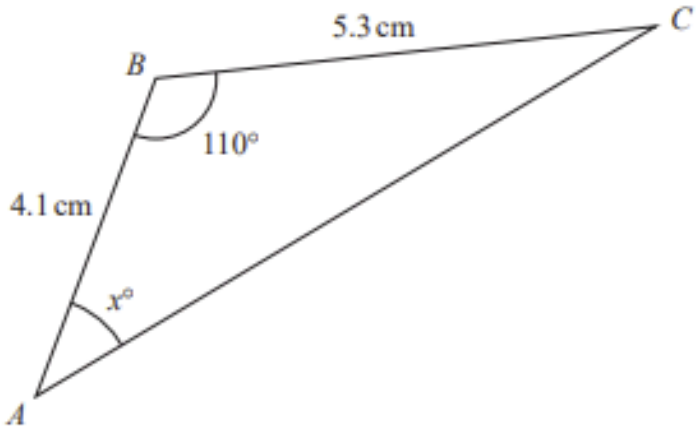


Diagram **NOT** accurately drawn

Calculate the value of x.
Give your answer correct to 3 significant figures.

(Total for Question 17 is 5 marks)

18. Jan 2019 1HR/Q21

Here is a triangle XYZ.

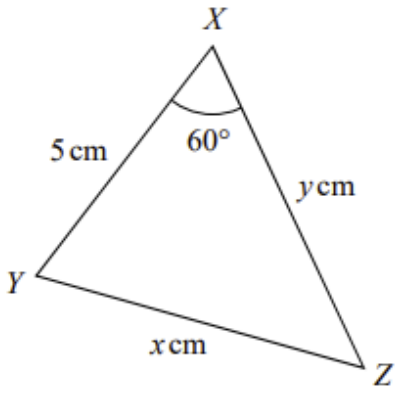


Diagram **NOT** accurately drawn

The perimeter of the triangle is k cm.

Given that $x = y - 1$
find the value of k.
Show your working clearly.

$k =$ .....

(Total for Question 21 is 5 marks)

19. Specimen 1H/Q23

A, B and C are three towns.

The bearing of B from A is 105°
The bearing of C from B is 230°

The distance of C from A is 180 km.
The distance of C from B is 95 km.

Calculate the distance of B from A.
Give your answer correct to 3 significant figures.

$k =$ .....

(Total for Question 21 is 5 marks)

20. Sample Paper 2018 1H/Q7

7

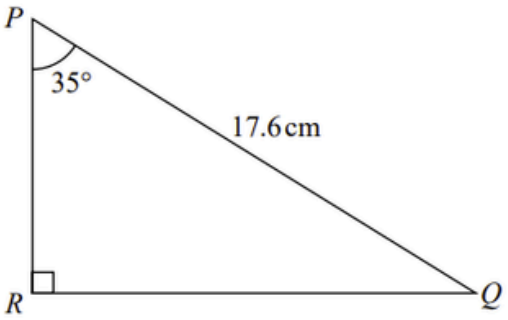


Diagram **NOT** accurately drawn

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

..... cm

(Total for Question 7 is 3 marks)

MARKING SCHEME

1. Nov 2025 1H/Q11

11	eg $\cos(ACB)=\frac{15}{21}$ **or** $\sin(ACB)=\frac{\sqrt{21^2-15^2}}{21}$ oe **or** 44.4(153…) **or** $\tan(DCB)=\frac{9}{15}$ **or** $\sin(DCB)=\frac{9}{\sqrt{9^2+15^2}}$ oe **or** 30.9(637…) **or** $\tan(BDC)=\frac{15}{9}$ **or** $\sin(BDC)=\frac{15}{\sqrt{9^2+15^2}}$ oe **or** 59.0(362…) **or** $\sin(BAC)=\frac{15}{21}$ **or** 45.5(846…) **OR** $(AB=)\ \sqrt{21^2-15^2}$ $(=\sqrt{216}=6\sqrt{6}=14.6(969...))$ **or** $(DC=)\ \sqrt{15^2+9^2}$ $(=\sqrt{306}=3\sqrt{34}=17.4(928...))$		4	M1	for a correct trig statement for angle *ACB* **or** angle *DCB* **or** angle *BDC* **or** angle *BAC* **OR** for use of Pythagoras to find *AB* or *DC* Allow use of any letter to represent the angles or sides Calculations or values do not need to be linked to the correct side or angle
	eg $\cos(ACB)=\frac{15}{21}$ **or** $\sin(ACB)=\frac{\sqrt{21^2-15^2}}{21}$ oe **or** 44.4(153…) **and** $\tan(DCB)=\frac{9}{15}$ **or** $\sin(DCB)=\frac{9}{\sqrt{9^2+15^2}}$ oe **or** 30.9(637…) **OR** $\frac{\sin ACD}{"14.6..."-9}=\frac{\sin(180-"59.0")}{21}$ oe **or** $\frac{\sin ACD}{"14.6..."-9}=\frac{\sin"45.5(846...)}{"17.4(928...)"}$ oe **or** $("14.6..."-9)^2=21^2+"17.4"^2-2\times21\times"17.4"\times\cos ACD$ oe			M1	for a correct trig statement for angle *ACB* **and** angle *DCB* or angle *BAC* **and** angle *DCB* or angle *BAC* **and** angle *ADC* **OR** for a correct trig statement involving angle *ACD* Allow use of any letter to represent the angles or sides Calculations or values do not need to be linked to the correct side or angle
	eg "44.4(153…)" – "30.9(637…)" **OR** $\sin(ACD)=\frac{\sin(180-"59.0")}{21}\times("14.6..."-9)$ $(=0.232...)$ oe **or** $\cos(ACD)=\frac{21^2+"17.4"^2-("14.6..."-9)^2}{2\times21\times"17.4"}$ $(=0.972...)$ oe			M1	for a complete method **OR** for a correct trig statement for angle *ACD* Allow use of any letter to represent the angle
	Correct answer scores full marks (unless from obvious incorrect working)	13.5		A1	Answer in range 13.4 – 13.6
					Total 4 marks

2. June 2025 1H/Q9

9	eg $12\sin60\left(=6\sqrt{3}=10.3(9...)\right)$ **or** $\sqrt{12^2-"6"^2}\left(=6\sqrt{3}=10.3(9...)\right)$ **or** (Area *ADC*) $=\frac{1}{2}\times12\times47\times\sin60(=244.2...)$		5	M1	for a method find the height of the trapezium **or** the area of triangle *ADC* The first two M1 marks can be awarded in either order
	eg $12\cos60(=6)$ **or** $\sqrt{12^2-\left("6\sqrt{3}"\right)^2}(=6)$			M1	(indep) for a method find the base of the triangle, condone missing brackets around $"6\sqrt{3}"$ The first two M1 marks can be awarded in either order
	eg $(AB=)\ 47-"6"-"6"\ (=35)$			M1	(dep on previous M1) for method to find the length of *AB*
	eg (Trapezium =) $\frac{1}{2}\times(47+"35")\times"10.3(9...)"$ **or** (Rectangle + 2 × Triangle =) $"35"\times"10.3(9...)"+2\times\frac{1}{2}\times"6"\times"10.3(9...)"$ **or** (Rectangle + 2 × Triangle =) $"35"\times"10.3(9...)"+2\times\frac{1}{2}\times"6"\times12\times\sin60$ **or** (Triangle *ADC* + Triangle *ABC* =) $"244.2..."+\frac{1}{2}\times12\times"35"\times\sin120$ oe eg $(47-"6")\times"10.3(9...)"$			M1	for a complete method There are other methods and marks should be awarded for a complete method that should give the correct area
	Working required	426		A1	(dep on M1) allow 420 – 427 from correct working
					Total 5 marks

3. Nov 2024 1H/Q12

12	eg $\tan 47 = \frac{(BD)}{4250}$ **or** $\tan 24 = \frac{4250}{(BC)}$ **or** $\tan(47+"19") = \frac{(BC)}{4250}$ **or** $\frac{(BD)}{\sin 47} = \frac{4250}{\sin 43}$ **or** $(AD =) \frac{4250}{\cos 47} (= 6231.686...)$ **or** $(AD =) \frac{4250}{\sin 43} (= 6231.686...)$ **or** $(AC =) \frac{4250}{\sin 24} (= 10449.021...)$ **or** $(AC =) \frac{4250}{\cos 66} (= 10449.021...)$		4	M1
	eg $(BD =) 4250 \tan 47 (= 4557.567...)$ **or** $(BC =) \frac{4250}{\tan 24} (= 9545.656...)$ **or** $(BD =) \frac{4250}{\sin 43} \times \sin 47 (= 4557.567...)$ **or** $\frac{(DC)}{\sin "19"} = \frac{"10449....."}{\sin "137"}$ **or** $\frac{(DC)}{\sin "19"} = \frac{"6231.686"}{\sin 24}$ **or** $(BC =) 4250 \times \tan(47+"19") (= 9545.656...)$ **or** $(DC^2 =) "6231"^2 + "10449"^2 - 2 \times "6231" \times "10449" \times \cos 19$			M1
	eg "9545.656" – "4557.567" (= 4988.089) **or** $(DC =) \frac{"6231.686"}{\sin 24} \times \sin 19$ **or** $(DC =) \frac{"10449....."}{\sin "137"} \times \sin "19"$ **or** $(DC =) \sqrt{"6231"^2 + "10449"^2 - 2 \times "6231" \times "10449" \times \cos 19}$			M1 for a complete method
	Correct answer scores full marks (unless from obvious incorrect working)	4988		A1 allow in the range 4932 – 4990

4. June 2024 1H/Q19

19	$\frac{(BD)}{\sin 62} = \frac{12.8}{\sin 40}$ oe or		5	M1 for correct use of sine rule for BD	M2 for $(CD =) \frac{12.8}{\sin 40} \times \sin 78$ $(= 19.4(781...))$ **and** $(BD =) \frac{"19.4(781...)"}{\sin 78} \times \sin 62$ $(= 17.5(82...))$
	$(BD =) \frac{12.8}{\sin 40} \times \sin 62 (= 17.5(82...))$			M1 for finding BD (truncated or rounded)	
	$"17.5(82...)"^2 = 13.4^2 + 15.2^2 - 2 \times 13.4 \times 15.2 \times \cos x$ or $309(.139) = 179(.56) + 231(.04) - 407(.36) \cos x$ oe			M1 for correct use of cosine rule	
	$(\cos x =) \frac{13.4^2 + 15.2^2 - "17.5(82...)"^2}{2 \times 13.4 \times 15.2}$ oe or $(\cos x =) \frac{179(.56) + 231(.04) - 309(.139...)}{407(.36)}$ oe or $(\cos x =) \frac{410(.6) - 309(.139...)}{407(.36)}$ oe or $(\cos x =) 0.247 - 0.256$ oe			M1 for a correct rearrangement of $\cos x$	
	Working not required, so correct answer scores full marks (unless from obvious incorrect working)	75.6		A1 accept 75.1 – 75.7	
					Total 5 marks

5. June 2024 1HR/Q15

15	eg $0.5 \times EF \times FG \times \sin 130 = 74$ oe **or** eg $EF \times FG \times \sin 130 = 2 \times 74$ oe		3	M1	for setting up an equation using the area of a triangle formula
	$(EF^2 =) \frac{2 \times 74}{\sin 130} (= 193.2...)$ oe **or** $(EF =) \sqrt{\frac{2 \times 74}{\sin 130}} (= \sqrt{193.2...})$ oe			M1	for a complete method to find EF^2 **or** EF
	Correct answer scores full marks (unless from obvious incorrect working)	13.9		A1	awrt 13.9
					Total 3 marks

6. Nov 2023 1H/Q10

10	$\tan 40 = \frac{8}{(AD)}$ or $\frac{(AD)}{\sin(90-40)} = \frac{8}{\sin 40}$ oe or $(AC =)\frac{8}{\sin 40}$ (= 12.4(457…) (D = foot of the perpendicular line)		5	M1
	$(AD =)\frac{8}{\tan 40}$ (= 9.5(3…)) or $(AD =)\frac{8}{\sin 40} \times \sin(90-40)$ (= 9.5(3…)) oe or $(AD =)\sqrt{"12.4"^2 - 8^2} = \sqrt{90.8(977...)}$ (= 9.5(3…)) oe or $(BC^2 =)"12.4"^2 + 22^2 - 2\times"12.4"\times 22\times\cos 40$ (= 219.4…) oe			M1
	$(DB =)$ 22 – "9.5(3…)" (= 12.4(659…= 12.5) or $(BC =)\sqrt{"12.4"^2 + 22^2 - 2\times"12.4"\times 22\times\cos 40}$ (= $\sqrt{219.4...}$ = 14.8) oe or $(BC =)\sqrt{8^2 + (22 - 9.5(3...))^2}$ (= 14.8) oe			M1
	$\tan x = \frac{8}{"12.5"}$ or $\cos x = \frac{"12.5"}{"14.8"}$ or $\sin x = \frac{8}{"14.8"}$ (×sin 90) oe or $\sin x = \frac{\sin 40}{"14.8"} \times "12.4"$ oe or $\cos x = \frac{22^2 + "14.8"^2 - "12.4"^2}{2\times 22\times"14.8"}$ oe			M1
	Working required	32.7		A1 Allow 32.3 – 32.8 dep on a correct method shown
				Total 5 marks

7. Jan 2023 1H/Q16

16	$\frac{\sin ABC}{24} = \frac{\sin 64}{31}$ oe		5	M1
	$(ABC =)\sin^{-1}\left(\frac{24\times\sin 64}{31}\right)$ (= 44.…)			M1
	180 – "44.…" – 64 (= 71.9…)			M1 accept 72
	$(DE^2 =)16^2 + 19^2 - 2\times16\times19\times\cos"71.9..."$ or $(DE =)\sqrt{16^2 + 19^2 - 2\times16\times19\times\cos"71.9..."}$ or $(DE =)\sqrt{617 - 181.8...}$ or $\sqrt{428.166...}$			M1 for DE^2 or DE
	Correct answer scores full marks (unless from obvious incorrect working)	20.7		A1 awrt 20.7
				Total 5 marks

8. June 2022 1H/Q18

18	$(AC^2 =)\ 9.7^2 + 12.3^2 - 2\times 9.7\times 12.3\times\cos 115$		5	M1 for the correct use of cosine rule
	$(AC^2 =)$ 346(.2…) **or** $(AC =)\ \sqrt{346(.2....)}$ or 18.6…			A1 for 346 or $\sqrt{346(.2....)}$ or 18.6…
	$\frac{\sin x}{9.7} = \frac{\sin 115}{"\sqrt{346}"}$ oe or $9.7^2 = "\sqrt{346}"^2 + 12.3^2 - 2\times"\sqrt{346}"\times 12.3\times\cos x$ or $\frac{1}{2}\times 9.7\times 12.3\times\sin 115 = \frac{1}{2}\times 12.3\times"\sqrt{346}"\times\sin x$ oe			M1 use of their AC dep on first M1 for correct use of sine rule **or** cosine rule **or** for setting up an equation using the area of a triangle formula to find $\sin x$
	$\sin x = 9.7\times\frac{\sin 115}{"\sqrt{346}"}$ oe or $\sin x = 0.47...$ or $\cos x = \frac{"\sqrt{346}"^2 + 12.3^2 - 9.7^2}{2\times"\sqrt{346}"\times 12.3}$ or $\cos x = 0.88...$			M1 use of their AC dep on first M1 Allow $(x =)\sin^{-1}(....)$ or $(x =)\cos^{-1}(....)$
		28.2		A1 awrt
				Total 5 marks

9. Jan 2022 1H/Q3

3	eg $\sin 65 = \frac{AB}{8.4}$ **or** $\frac{AB}{\sin 65} = \frac{8.4}{\sin 90}$		3	M1	for setting up a trig equation in AB
	eg $(AB =)\ 8.4\sin 65$ **or** $(AB =)\frac{8.4\sin 65}{\sin 90}$			M1	for a complete method
		7.61		A1	accept 7.61 – 7.613
					Total 3 marks

10. Jan 2021 1H/Q12

12 (a)	$\tan 20 = \frac{100}{d}$ oe or $\tan(90-20) = \frac{d}{100}$ oe or $\frac{d}{\sin(90-20)} = \frac{100}{\sin 20}$ oe		3	M1	
	$(d =)\frac{100}{\tan 20}(= 274.747\ldots)$ or $(d =)100\times\tan(90-20)(= 274.747\ldots)$ or $(d =)\frac{100}{\sin 20}\times\sin(90-20)(= 274.747\ldots)$			M1	
	Correct answer scores full marks (unless from obvious incorrect working)	275		A1 awrt 275	
(b)	$\tan 25 = \frac{100+h}{275}$ oe or $\tan 25 = \frac{y}{275}$ oe or $275\times\tan 25\ (=128....)$ or $\tan(90-25) = \frac{275}{100+h}$ oe or $\tan(90-25) = \frac{275}{y}$ oe or $\frac{100+h}{\sin 25} = \frac{275}{\sin(90-25)}$ or 128.1 – 128.2 (y is the height of cliff and radio mast)		3	M1 ft part (a) Allow $(hyp =)\sqrt{100^2+275^2}$ $(=\sqrt{85486.321} = 292.380)$ or $(hyp =)\frac{100}{\sin 20}\times\sin 90\ (= 292.380)$	
	$(h =)275\times\tan 25 - 100\ = 28.1169...$ or $(h =)\frac{275}{\tan\ 90-25} - 100\ (= 28.1169...)$ or $(h =)\frac{275}{\sin(90-25)}\times\sin 25 - 100\ (= 28.1169...)$			M1 ft part (a) $(h =)\frac{"292.380"}{\sin(90-25)}\times\sin(25-20)$ $(= 28.1169...)$	
	Correct answer scores full marks (unless from obvious incorrect working)	28.1		A1 Accept answers in the range 28 – 28.2	
					Total 5 marks

11. Jan 2021 1H/Q10

10	e.g. $\sin 65 = \frac{16}{AB}$ **or** $\cos 25 = \frac{16}{AB}$ **or** $\frac{AB}{\sin 90} = \frac{16}{\sin 65}$ **or** $\tan 65 = \frac{16}{AD}$ **or** $\tan 25 = \frac{AD}{16}$ **or** $\frac{AD}{\sin 25} = \frac{16}{\sin 65}$		4	M1	for a correct trig ratio for AB **or** AD accept 180 – 90 – 65 for 25
	e.g. $(AB =)\frac{16}{\sin 65}(= 17.654\ldots)$ **or** $(AB =)\frac{16}{\cos 25}(= 17.654\ldots)$ **or** $(AB =)\frac{16\sin 90}{\sin 65}(= 17.654\ldots)$ **and** $(AD =)\frac{16}{\tan 65}(= 7.460\ldots)$ **or** $(AD) = 16\times\tan 25\ (= 7.460\ldots)$ **or** $(AD =)\frac{16\sin 25}{\sin 65}(= 7.460\ldots)$			M1	for finding AB **and** AD Allow use of Pythagoras $(AD =)\sqrt{"17.654..."^2 - 16^2}\ (= 7.460\ldots)$ or $(AB =)\sqrt{"7.460..."^2 + 16^2}\ (= 17.654\ldots)$
	("17.654…" × 2) + ("7.460…" × 2) oe			M1	for a complete method to find the perimeter
		50.2		A1	accept 49.6 – 50.6
					Total 4 marks

12. Jan 2020 1H/Q9

9		$\cos 63 = \frac{24.3}{(PQ)}$ **or** $\sin 27 = \frac{24.3}{(PQ)}$ **or** $\frac{(PQ)}{\sin 90} = \frac{24.3}{\sin 27}$ **or** $\frac{\sin 90}{(PQ)} = \frac{\sin 27}{24.3}$ oe		3	M1 for a correct trigonometric ratio	M2 for $(RQ =) 24.3 \times \tan 63 (= 47.6914..)$ **and** $(PQ =) \sqrt{47.6914^2 + 24.3^2}$ oe
		$(PQ =) \frac{24.3}{\cos 63}$ **or** $(PQ =) \frac{24.3}{\sin 27}$ **or** $(PQ) = \frac{24.3}{\sin 27} \times \sin 90$			M1 for a correct rearrangement for PQ	
			53.5		A1 Accept 53.5 - 53.53	
						Total 3 marks

13. Jan 2020 1HR/Q15

15	e.g. $(EF =) 12\cos 40 (= 9.19...)$ **or** $(FD =) 12\sin 40 (= 7.71...)$ **and** $(EF =) \sqrt{12^2 - "7.71"^2}$ $(= 9.19...)$			M2	complete method to find EF (if not M2 then M1 for a correct statement involving EF e.g. $\frac{EF}{12} = \cos 40$)
	e.g. $\frac{"9.19"}{EG} = \tan 28$ or $\tan 62 = \frac{EG}{"19.9"}$ **or** $\frac{"9.19"}{FG} = \sin 28 (= 19.5...)$ **and** $"19.5"^2 - "9.19"^2 (= 298.9...)$			M1	(dep on M2) for a correct trig statement involving EG **or** complete method to find FG **and** a correct start to Pythagoras process
		17.3	4	A1	accept 17.2 – 17.3
					Total 4 marks

14. Jan 2020 1HR/Q21

21	$CB = 13\sin 40$ $(= 8.3562...)$			M1
	$\frac{1}{2} \times 6 \times "8.35..." \times \sin ACB = 22$			M1
	Acute version of $ACB = \sin^{-1}\left(\frac{22}{\frac{1}{2} \times 6 \times "8.35..."}\right)$ $(= 61.35\ldots)$			M1
	ACB = 180 – "61.353…" (= 118.647...)			M1
	$AB^2 = 6^2 + "8.35..."^2 - 2 \times 6 \times "8.35..." \times \cos "118.64"$ (= 153.98...)			M1
		12.4	6	A1 accept 12.3 – 12.5
				Total 6 marks

15. June 2019 1H/Q18

18		$17.8^2 + 26.3^2 - 2 \times 17.8 \times 26.3 \times \cos 36$		3	M1
		e.g. 1008.5... – 757.... **or** 251(.06...)			M1 for correct order of operations
			15.8		A1 for ans in range 15.8 – 15.9
					Total 3 marks

16. Jan 2019 1H/Q10

Question	Working	Answer	Mark	Notes
10	**Working with *CD* and then triangle *ABD***			
	E.g. $\tan 20 = \frac{CD}{13}$			M1 for a correct statement or equation including *CD* as the only variable E.g. $CD^2 = \left(\frac{13}{\cos 20}\right)^2 - 13^2$
	E.g. (*CD* =) 13tan20 **or** 4.7(316...)			M1 for a correct method to find *CD* E.g. $\sqrt{\left(\frac{13}{\cos 20}\right)^2 - 13^2}$
	E.g. $\tan(BAD) = \frac{8+"4.73"}{13}$ **or** $\tan(BAD) = 0.97(93...)$			M1 for a correct statement or equation including angle *BAD* as the only variable
	E.g. (BAD =) $\tan^{-1}("0.979")$ **or** 44.4(024...)			M1 for a correct method to find angle *BAD*
		24.4	5	A1 for 24.3 - 24.41 Award M1A1M1M1A0 for an answer in the range 44.3 – 44.41

Question	Working	Answer	Mark	Notes
10	**Alternative mark scheme – working with *AC* and then triangle *ABC***			
	E.g. $\cos 20 = \frac{13}{AC}$			M1 for a correct statement or equation including *AC* as the only variable E.g. $AC^2 = 13^2 + (13\tan 20)^2$
	E.g. (*AC* =) $\frac{13}{\cos 20}$ **or** 13.8(3…)			M1 for a correct method to find *AC* E.g. $\sqrt{13^2 + (13\tan 20)^2}$
	E.g. (*AB* =) $\sqrt{"13.8"^2 + 8^2 - 2\times 13.8\times 8\times\cos(110)}$ (=18.1(9..) **or** 18.2			M1 for a correct method to find *AB*
	E.g. $\frac{\sin BAC}{8} = \frac{\sin 110}{"18.1"}$ **or** $8^2 = "13.8"^2 + "18.1"^2 - 2\times"13.8"\times"18.1"\times\cos BAC$			M1 for a correct statement or equation including angle *BAC* as the only variable
		24.4	5	A1 for ans in range 24.3 - 24.41 Award M4A0 for an answer in the range 44.3 – 44.41

17. Jan 2019 1H/Q17

Question	Working	Answer	Mark	Notes
17	$(AC^2 =)\ 4.1^2 + 5.3^2 - 2\times 4.1\times 5.3\times\cos(110)$			M1 for the correct use of Cosine rule to find *AC*
	$(AC =)\ \sqrt{16.81 + 28.09 + 14.8(641...)}$ or $\sqrt{59.7(641...)}$ or 7.7(3073) **or** $AC^2 = 59.7...$			M1 NB: there must be evidence of correct order of operations for this mark to be awarded
	Eg $\frac{\sin x}{5.3} = \frac{\sin 110}{"7.7"}$ **or** $\frac{5.3}{\sin x} = \frac{"7.7"}{\sin 110}$ **or** $5.3^2 = 4.1^2 + "7.7"^2 - 2\times 4.1\times"7.7"\times\cos x$ oe			M1 dep on first M1 for correct use of sine rule **or** cosine rule ft for their value of *AC* or AC^2
	Eg $\sin x = \frac{\sin 110}{"7.7"}\times 5.3\ (= 0.644(2...))$ **or** $\cos x = \frac{4.1^2 + "7.7"^2 - 5.3^2}{2\times 4.1\times"7.7"}\ (= 0.764(83...)$			M1 for isolating sin*x* or cos*x*
		40.1	5	A1 for 40.1 – 40.11

18. Jan 2019 1HR/Q21

21	$x^2 = 5^2 + y^2 - 2\times5\times y\cos 60°$ $(y-1)^2 = 5^2 + y^2 - 5y$ **or** $x^2 = 5^2 + (x+1)^2 - 5x - 5$ $y^2 - 2y + 1 = 25 + y^2 - 5y$ **or** $x^2 = 5^2 + x^2 + 2x + 1 - 5x - 5$ $5y - 2y = 25 - 1$ **or** $y = 8$ **or** $3x = 21$ **or** $x = 7$	20	5	M1 recognising need for the cosine rule M1 M1 for expansion of $(y-1)^2$ or $(x+1)^2$ in a correct equation M1 for correct linear equation with correct isolation of terms A1

19. Specimen 1H/Q23

23	eg. diagram drawn showing relative positions of A, B and C can be implied by angle $ABC = 55°$			M1 interprets information
	$\frac{\sin CAB}{95} = \frac{\sin 55}{180}$			M1
	$CAB = \sin^{-1}\left(\frac{95\sin 55}{180}\right)$ **or** $CAB = 25.6(1\ldots)$			M1 dep
	$AB = \frac{180}{\sin 55}\times\sin(180-55-"25.6")$			M1 dep or for $\sqrt{180^2 + 95^2 - 2\times180\times95\times\cos(180-55-"25.6"}$
		217	5	A1
				Total 5 marks

20. Sample Paper 2018 1H/Q7

7	$\cos 35 = \frac{PR}{17.6}$ $17.6 \times \cos 35$	14.4	3	AO2	M1 M1 A1 14.4 ~ 14.42