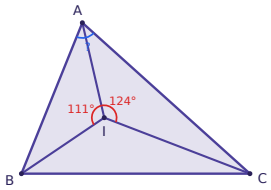
Task card 1 Expert Angle Problems: Triangle Ce...

The interior angles of a convex polygon form an arithmetic sequence. The smallest angle is 107° and the angles increase by 8° each time. How many sides does the polygon have?

Task card 2 Expert Angle Problems: Triangle Ce...

I is the incenter of triangle ABC (the point where its angle bisectors meet). If ∠AIB = 111° and ∠AIC = 124°, find ∠BAC.

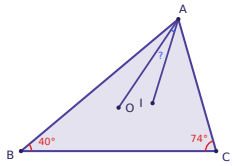


Task card 3 Expert Angle Problems: Triangle Ce...

The interior angles of a convex polygon form an arithmetic sequence. The smallest angle is 96° and the angles increase by 6° each time. How many sides does the polygon have?

Task card 4 Expert Angle Problems: Triangle Ce...

Acute triangle ABC has circumcenter O and incenter I. If ∠ABC = 40° and ∠ACB = 74°, find ∠OAI.

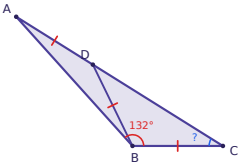


Task card 5 Expert Angle Problems: Triangle Ce...

A regular star is drawn by joining every 3rd vertex of a regular polygon. Each point of the star measures 45°. How many points does the star have?

Task card 6 Expert Angle Problems: Triangle Ce...

In triangle ABC, point D lies on side AC so that AD = DB = BC. If ∠ABC = 132°, find ∠ACB.

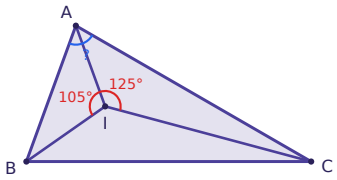


Task card 7 Expert Angle Problems: Triangle Ce...

The interior angles of a convex polygon form an arithmetic sequence. The smallest angle is 98° and the angles increase by 5° each time. Find the largest angle.

Task card 8 Expert Angle Problems: Triangle Ce...

I is the incenter of triangle ABC (the point where its angle bisectors meet). If ∠AIB = 105° and ∠AIC = 125°, find ∠BAC.

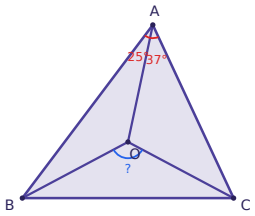


Task card 9 Expert Angle Problems: Triangle Ce...

The interior angles of a convex polygon form an arithmetic sequence. The smallest angle is 102° and the angles increase by 3° each time. How many sides does the polygon have?

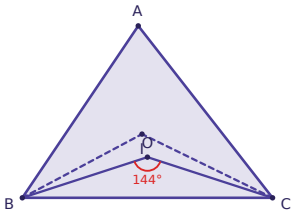
Task card 10 Expert Angle Problems: Triangle Ce...

O is the circumcenter of acute triangle ABC. If ∠OAB = 25° and ∠OAC = 37°, find ∠BOC.



Task card 11 Expert Angle Problems: Triangle Ce...

Acute triangle ABC has circumcenter O and incenter I. If ∠BOC = 144°, find ∠BIC.

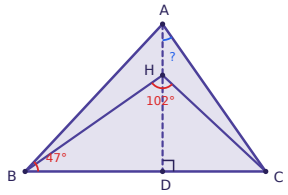


Task card 12 Expert Angle Problems: Triangle Ce...

The interior angles of a convex polygon form an arithmetic sequence. The smallest angle is 108° and the angles increase by 8° each time. How many sides does the polygon have?

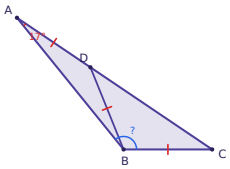
Task card 13 Expert Angle Problems: Triangle Ce...

H is the orthocenter of acute triangle ABC (the point where its altitudes meet). If ∠BHC = 102° and ∠ABC = 47°, find ∠HAC.



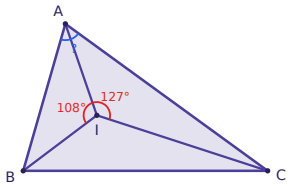
Task card 14 Expert Angle Problems: Triangle Ce...

In triangle ABC, point D lies on side AC so that AD = DB = BC. If ∠BAC = 17°, find ∠ABC.



Task card 15 Expert Angle Problems: Triangle Ce...

I is the incenter of triangle ABC (the point where its angle bisectors meet). If ∠AIB = 108° and ∠AIC = 127°, find ∠BAC.

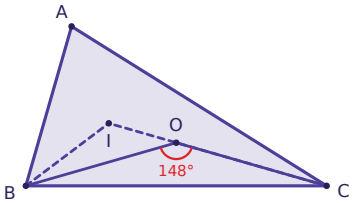


Task card 16 Expert Angle Problems: Triangle Ce...

The interior angles of a convex polygon form an arithmetic sequence. The smallest angle is 120° and the angles increase by 5° each time. How many sides does the polygon have?

Task card 17 Expert Angle Problems: Triangle Ce...

Acute triangle ABC has circumcenter O and incenter I. If ∠BOC = 148°, find ∠BIC.



Task card 18 Expert Angle Problems: Triangle Ce...

A regular star is drawn by joining every 5th vertex of a regular polygon. Each point of the star measures 105°. How many points does the star have?

Task card 19 Expert Angle Problems: Triangle Ce...

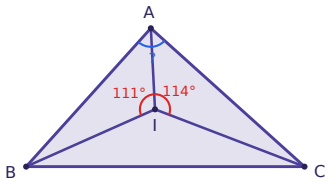
Inside acute angle XOY, points P_1, P_3, P_5, ... lie on ray OX and points P_2, P_4, ... lie on ray OY, each point farther from O than the one before it on the same ray, so that $OP_1 = P_1P_2 = \ldots = P_4P_5$. The last segment P_4P_5 is perpendicular to OY (the ray through P_4). Find $\angle OP_2P_3$.

Task card 20 Expert Angle Problems: Triangle Ce...

The interior angles of a convex polygon form an arithmetic sequence. The smallest angle is 116° and the angles increase by 6° each time. How many sides does the polygon have?

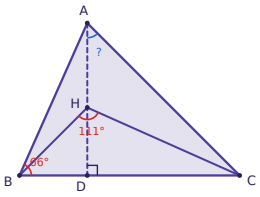
Task card 21 Expert Angle Problems: Triangle Ce...

I is the incenter of triangle ABC (the point where its angle bisectors meet). If $\angle AIB = 111°$ and $\angle AIC = 114°$, find $\angle BAC$.



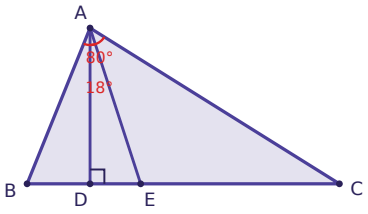
Task card 22 Expert Angle Problems: Triangle Ce...

H is the orthocenter of acute triangle ABC (the point where its altitudes meet). If $\angle BHC = 111°$ and $\angle ABC = 66°$, find $\angle HAC$.



Task card 23 Expert Angle Problems: Triangle Ce...

In triangle ABC, AD is the altitude to BC and AE bisects $\angle BAC$ (D and E lie on BC). If $\angle DAE = 18°$, $\angle BAC = 80°$ and $\angle ABC > \angle ACB$, find $\angle ABC$.



Task card 24 Expert Angle Problems: Triangle Ce...

The interior angles of a convex polygon form an arithmetic sequence. The smallest angle is 121° and the angles increase by 4° each time. Find the largest angle.

Expert Angle Problems: Triangle Centers, Circles & Polygons Task Cards

Recording sheet · Grade 10 · Solve each problem. Give angles in degrees. Equal tick marks show equal segments. Figures are not drawn to scale.

Scan to check your answers

Name: _____ Date: _____

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16
17	18	19	20
21	22	23	24

Expert Angle Problems: Triangle Centers, Circles & Polygons Task Cards: Answer Key

Grade 10 · Medium

The answers online

1. 8	**2.** 70°	**3.** 5
4. 17°	**5.** 8	**6.** 32°
7. 118°	**8.** 80°	**9.** 5
10. 124°	**11.** 126°	**12.** 9
13. 35°	**14.** 129°	**15.** 70°
16. 9	**17.** 127°	**18.** 24
19. 126°	**20.** 9	**21.** 90°
22. 45°	**23.** 68°	**24.** 149°