

y6math1 Hard Answers

Answer Key

Question 1:

Jamal draws an angle and measures it at 116° . What type of angle is it? Its supplementary angle is x° . Find x and state what type of angle the supplementary angle is.

Answer: 116° is obtuse ($90^\circ < x < 180^\circ$). $x = 180 - 116 = 64^\circ$. 64° is acute.

Question 2:

A clock shows 3:45. What is the angle between the hour hand and the minute hand? Explain whether this angle is acute, obtuse, or reflex.

Answer: Minute hand at 3:45 is on 9 (270°). Hour hand at 3.75 h = $3.75 \times 30 = 112.5^\circ$. Difference = $270 - 112.5 = 157.5^\circ$, which is obtuse.

Question 3:

At a point, three angles meet: 47° , 88° , and m° . The total around the point is 360° . Find m° and classify all three angles by type.

Answer: $m = 360 - 47 - 88 = 225^\circ$. 47° acute, 88° acute, 225° reflex.

Question 4:

Two straight lines cross, creating four angles. One angle is 112° . Name the type of each angle. Find the size of the other three angles and state which ones are vertically opposite.

Answer: 112° is obtuse. Adjacent = $180 - 112 = 68^\circ$ (acute). Vertically opposite pairs: 112° and 112° , 68° and 68° .

Question 5:

A right angle is divided into two angles by a ray. One angle is 36° . The other is y° . Find y . If the smaller angle is doubled, is the pair still complementary? Explain.

Answer: $y = 90 - 36 = 54^\circ$. Doubling 36 gives 72° ; $72 + 54 = 126 \neq 90$, so no longer complementary.

Question 6:

Sofia constructs an angle labelled RST using the letter R, S, T. If angle RST = 74° and angle TSV = 29° lie on a straight line R-S-V, find angle VSR.

Answer: On straight line R-S-V, angle VSR = $180 - 74 - 29 = 77^\circ$.

Question 7:

An angle measures 168° . State its type. Find its reflex angle and its supplementary angle. What is the difference between the reflex angle and the supplementary angle?

Answer: 168° is obtuse. Reflex = $360 - 168 = 192^\circ$. Supplementary = $180 - 168 = 12^\circ$. Difference = $192 - 12 = 180^\circ$.

Question 8:

A straight angle is split into four parts: a° , b° , c° , and d° . The first three are 39° , 52° , and 67° . Find d° . If each part were doubled, would they still lie on a straight line? Show working.

Answer: $d = 180 - 39 - 52 - 67 = 22^\circ$. Doubled: $78 + 104 + 134 + 44 = 360 \neq 180$, so no, they would form a revolution, not a straight line.

Question 9:

Ben says: 'A reflex angle is bigger than a straight angle but smaller than a revolution.' Give two example measures that are reflex angles, and state their supplementary angles.

Answer: Example reflex angles: 200° and 300° . Supplementary: $200^\circ \rightarrow 160^\circ$ (negative for 300° : -120° , which is not a real angle), so reflex angles over 180° have no positive supplement.

Question 10:

At a point, four angles measure $5x$, $3x$, $2x$, and $2x$ degrees, and they total 360° . Find x and the size of each angle. Classify the largest angle by type.

Answer: $12x = 360$, $x = 30^\circ$. Angles: 150° , 90° , 60° , 60° . Largest 150° is obtuse.

Question 11:

A triangle has one angle of 43° . The other two are equal. Find their sizes and name the triangle's angle type. If one equal angle is increased by 17° , find the new third angle.

Answer: Other two = $(180 - 43) \div 2 = 68.5^\circ$ each. Triangle is acute. Increase one to 85.5 : third = $180 - 43 - 85.5 = 51.5^\circ$.

Question 12:

Using letters, PQR is an angle where QR is a straight line from P to R. If angle PQS = $3y$ and angle SQR = y , and they together form a straight angle, find y and both angles.

Answer: $3y + y = 180$, $4y = 180$, $y = 45^\circ$. Angles: 135° and 45° .

Question 13:

An angle measures 144° and its supplement is 36° . How many times larger is the 144° angle than its supplement? What type of angle is the 144° angle? If the 144° angle is increased by 25%, find the new supplement.

Answer: $144 \div 36 = 4$ times. 144° is obtuse ($90^\circ < 144^\circ < 180^\circ$). Increased by 25%: $144 \times 1.25 = 180^\circ$. New supplement = $180 - 180 = 0^\circ$.

Question 14:

Lily looks at an angle of 5° and says it is acute. What is its reflex angle? How many 5° angles fit into one full revolution of 360° ?

Answer: Reflex angle of $5^\circ = 360 - 5 = 355^\circ$. $360 \div 5 = 72$ angles fit in a revolution.

Question 15:

A diagram shows two vertically opposite pairs. One angle is $8z - 20$ and the opposite angle is $2z + 40$. Find z and the size of all four angles, then classify each type.

Answer: $8z - 20 = 2z + 40 \rightarrow 6z = 60$, $z = 10$. Angles: 60° and 60° (acute); adjacent = $180 - 60 = 120^\circ$ (obtuse). Four angles: 60, 120, 60, 120.