

WA5MMGTW5

Two-dimensional space and structures

Core + Challenge

NAPLAN-style

Measuring and Drawing Angles — Marking Key

I can estimate, measure and draw angles in degrees with a protractor, including reflex angles.

For tutors and parents. Award method marks for correct working even if the final answer is wrong.

Marks summary

A Warm up: 16 B Practise: 21 C Think it through: 10 D Challenge: 9 **Total: 56**

Gold shading in this key shows what the child should have shaded or drawn. Accept any correct arrangement unless the question fixes it.

A

Warm up *answers*

/ 16 marks

Q	Answer	Model answer / notes	Marks
1	40°	One arm is on 0 of the inner scale; read the inner scale.	1
2	125°	Inner scale from the right-hand 0.	1
3	70°	One arm is on the left 0, so read the outer scale.	1
4	150°	Outer scale from the left-hand 0.	1
5	90°	A right angle.	1
6	55°	Neither arm is on 0: $75 - 20 = 55$.	1
7	35°	Accept $\pm 2^\circ$.	1
8	80°	Accept $\pm 2^\circ$.	1
9	115°	Accept $\pm 2^\circ$.	1
10	160°	Accept $\pm 2^\circ$.	1
11	65°	Accept $\pm 2^\circ$.	1
12	145°	Accept $\pm 2^\circ$.	1
13	30° drawn	 Accept $\pm 2^\circ$.	1
14	75° drawn	 Accept $\pm 2^\circ$.	1

Measuring and Drawing Angles · WA5MMGTW5

Q	Answer	Model answer / notes	Marks
15	110° drawn	 Accept $\pm 2^\circ$.	1
16	165° drawn	 Accept $\pm 2^\circ$.	1

B

Practise *answers and working*

/ 21 marks

Q	Answer	Working / sample response	Marks																
1	A 50°, B 100°, C 140°	<table border="1"> <thead> <tr> <th>Angle</th><th>Estimate</th><th>Measure</th><th>Type</th></tr> </thead> <tbody> <tr> <td>A</td><td>any</td><td>50°</td><td>acute</td></tr> <tr> <td>B</td><td>any</td><td>100°</td><td>obtuse</td></tr> <tr> <td>C</td><td>any</td><td>140°</td><td>obtuse</td></tr> </tbody> </table> Measured sizes: A = 50° (acute), B = 100° (obtuse), C = 140° (obtuse). Estimates are not marked if sensible. <i>1 mark for each angle measured ($\pm 2^\circ$) and named correctly.</i>	Angle	Estimate	Measure	Type	A	any	50°	acute	B	any	100°	obtuse	C	any	140°	obtuse	3
Angle	Estimate	Measure	Type																
A	any	50°	acute																
B	any	100°	obtuse																
C	any	140°	obtuse																
2	A 30°, B 40°, C 110°; C is obtuse	Angle A = 30°, angle B = 40°, angle C = 110°. Angle C is between 90° and 180°, so it is obtuse. <i>1 mark: A and B ($\pm 2^\circ$ each). 1 mark: C ($\pm 2^\circ$). 1 mark: names C as the obtuse angle.</i>	3																
3	25°, acute	The angle at X is 25°. It is less than 90°, so it is acute. <i>1 mark: 25° ($\pm 2^\circ$). 1 mark: acute.</i>	2																
4	60°	 At 2 o'clock the minute hand is on 12 and the hour hand is on 2. Each hour gap is $360^\circ \div 12 = 30^\circ$, so $2 \times 30^\circ = 60^\circ$. <i>1 mark: hands drawn correctly. 1 mark: 60° ($\pm 2^\circ$).</i>	2																

Measuring and Drawing Angles · WA5MMGTW5

Q	Answer	Working / sample response	Marks
5	a) 90° b) 225° c) 315°	a) North to east is a quarter turn = 90°. b) North to south is 180°, and south to south-west is another 45°: $180 + 45 = 225^\circ$. c) North to west is 270°, and west to north-west is another 45°: $270 + 45 = 315^\circ$. <i>1 mark each part.</i>	3
6	250°	The smaller angle is 110°. $360^\circ - 110^\circ = 250^\circ$. <i>1 mark: measures the smaller angle as 110° (±2°).</i> <i>1 mark: 250°.</i>	2
7	200° drawn	 $360^\circ - 200^\circ = 160^\circ$, so draw 160° on the other side of the arm, or draw 180° then 20° more. <i>1 mark: correct method.</i> <i>1 mark: angle drawn within ±2°, with the reflex arc marked.</i>	2
8	115°, obtuse	The angle measures 115°. Accept 113°–117°. <i>1 mark: 115° (±2°).</i> <i>1 mark: says it is obtuse.</i>	2
9	65°	The angle between the road edges at P is 65°. Accept 63°–67°. <i>2 marks: 65° (±2°). 1 mark: within ±5°.</i>	2

C

Think it through *sample answers and criteria*

/ 10 marks

Q	Answer	Working / sample response	Marks
1	No, it is 35°	The angle is acute (less than 90°), so it cannot be 145°. Mia read the wrong (outer) scale. The arm is on 0 of the inner scale, so the angle is 35°. <i>1 mark: says Mia is wrong / angle is 35°.</i> <i>1 mark: explains she read the wrong scale or that an acute angle must be under 90°.</i>	2
2	False	Angle size is the amount of turn between the arms, not the arm length. P is 70° and Q is 45°, so P is bigger. <i>1 mark: False.</i> <i>1 mark: explains that arm length does not change the angle (may quote the measurements).</i>	2

Measuring and Drawing Angles · WA5MMGTW5

Q	Answer	Working / sample response	Marks
		Always Sometimes Never	
3	Sometimes	$50^\circ + 60^\circ = 110^\circ$, which is obtuse. $20^\circ + 30^\circ = 50^\circ$, which is acute. So it is only sometimes true. <i>1 mark: Sometimes.</i> <i>1 mark: one example each way.</i>	2
4	215°	105° , 125° , 165° are obtuse (between 90° and 180°). 215° is more than 180° , so it is reflex. <i>1 mark: 215°.</i> <i>1 mark: explains the others are obtuse and 215° is reflex.</i>	2
5	Half a turn	If one arm turns until it points the opposite way, it has made half of a full turn. Half of 360° is 180° , so a straight angle is 180° . <i>1 mark: links it to half a turn.</i> <i>1 mark: half of $360^\circ = 180^\circ$.</i>	2

D

Challenge solutions and criteria

/ 9 marks

Q	Answer	Working / sample response	Marks
1	120° and 240°	 From 12 to 4 is 4 hour gaps of 30°: $4 \times 30^\circ = 120^\circ$. The reflex angle is the rest of the turn: $360^\circ - 120^\circ = 240^\circ$. <i>1 mark: hands drawn correctly.</i> <i>1 mark: 120°.</i> <i>1 mark: 240° with reasoning.</i>	3
2	C = 70°, AC ≈ 5.5 cm, BC ≈ 4.9 cm	An accurate drawing gives angle C = 70° . AC measures about 5.5 cm (55 mm) and BC about 4.9 cm (49 mm). <i>1 mark: AB = 6 cm and both angles drawn accurately ($\pm 2^\circ$).</i> <i>1 mark: angle C = 70° ($\pm 3^\circ$).</i> <i>1 mark: AC and BC both within ± 2 mm of 5.5 cm and 4.9 cm.</i>	3
3	a) West b) 90° c) North-east	a) 270° clockwise from north is three quarter turns: west. b) $360^\circ - 270^\circ = 90^\circ$ anticlockwise. c) West is at 270° ; $270 + 135 = 405$, and $405 - 360 = 45^\circ$, which is north-east. <i>1 mark each part.</i>	3