Drawing Angles with Given Measures

Name: _____	Date: _____	Score: _____ / 24

Quick Review

To **draw an angle** with a protractor, start by drawing one ray and lining up the protractor's center on its endpoint. Then count up from $0°$ to the measure you want and make a mark, and draw the second ray to that mark. Before you draw, it helps to picture the angle: an **acute** angle (under $90°$) is narrow, a **right** angle is exactly $90°$, and an **obtuse** angle (over $90°$) is wide. Knowing the type tells you roughly how open your drawing should look. Two angle measures that add up to $90°$ together make a square corner.

◇ **Example:** You need to draw an angle that is $40°$. What type of angle is it, and how much smaller is it than a right angle?
⇒ First decide the type. Since $40°$ is less than $90°$, it is an acute angle, so your drawing should look narrow. To see how much smaller it is than a right angle, subtract from 90: $90 - 40 = 50$. So a $40°$ angle is $50°$ less open than a square corner.

Answer: acute, $50°$ less than a right angle

PRACTICE

Name the type of each angle you would draw, or find the measure described.

1. Type of a $20°$ angle _____
2. Type of a $90°$ angle _____
3. Type of a $130°$ angle _____
4. Type of a $70°$ angle _____
5. Type of a $160°$ angle _____
6. Type of a $35°$ angle _____
7. Type of a $105°$ angle _____
8. Type of a $50°$ angle _____
9. Type of a $140°$ angle _____
10. Type of a $10°$ angle _____
11. An angle that is $30°$ less than a right angle _____
12. An angle that is $20°$ more than a right angle _____
13. An angle that is $15°$ less than a right angle _____
14. An angle that is $45°$ more than a right angle _____
15. An angle that is half of a right angle _____
16. An angle that is twice a $40°$ angle _____
17. An angle that is $25°$ more than a right angle _____
18. An angle that with $60°$ makes a right angle _____
19. An angle that with $25°$ makes a right angle _____
20. An angle that is $10°$ less than a straight angle _____

♦ Word Problems

21. Leo wants to draw an angle of $55°$ for an art project. What type of angle should he draw, and how much less open is it than a right angle? _____
22. A coach draws a play with an angle that is $30°$ wider than a right angle. What is the measure of that angle? _____
23. Ava needs to draw a $90°$ angle but only knows how to draw $45°$ angles. How many $45°$ angles placed side by side make the $90°$ angle? _____
24. On a worksheet, Sam must draw an angle that with a $35°$ angle adds up to a straight angle. What measure should Sam draw? _____

Answer Keys

1. acute
2. right
3. obtuse
4. acute
5. obtuse
6. acute
7. obtuse
8. acute
9. obtuse
10. acute
11. 60°
12. 110°
13. 75°
14. 135°
15. 45°
16. 80°
17. 115°
18. 30°
19. 65°
20. 170°
21. acute, 35° less
22. 120°
23. 2 angles
24. 145°

Step-by-Step Explanations

1. Since 20° is less than 90°, you would draw an acute angle.
2. An angle of exactly 90° is a right angle, a square corner.
3. Since 130° is more than 90°, you would draw an obtuse angle.
4. Since 70° is less than 90°, you would draw an acute angle.
5. Since 160° is more than 90°, you would draw an obtuse angle.
6. Since 35° is less than 90°, you would draw an acute angle.
7. Since 105° is more than 90°, you would draw an obtuse angle.
8. Since 50° is less than 90°, you would draw an acute angle.
9. Since 140° is more than 90°, you would draw an obtuse angle.
10. Since 10° is less than 90°, you would draw an acute angle.
11. A right angle is 90°, so $90 - 30 = 60^\circ$.
12. A right angle is 90°, so $90 + 20 = 110^\circ$.
13. A right angle is 90°, so $90 - 15 = 75^\circ$.
14. A right angle is 90°, so $90 + 45 = 135^\circ$.
15. Half of 90° is $90 \div 2 = 45^\circ$.
16. Twice 40° is $2 \times 40 = 80^\circ$.
17. A right angle is 90°, so $90 + 25 = 115^\circ$.
18. A right angle is 90°, so the missing part is $90 - 60 = 30^\circ$.
19. A right angle is 90°, so the missing part is $90 - 25 = 65^\circ$.
20. A straight angle is 180°, so $180 - 10 = 170^\circ$.
21. 55° is less than 90°, so it is acute. It is $90 - 55 = 35^\circ$ less open than a right angle.
22. A right angle is 90°. An angle 30° wider is $90 + 30 = 120^\circ$.
23. Each angle is 45°, and $45 + 45 = 90^\circ$, so 2 of them make a right angle.
24. A straight angle is 180°. The missing part is $180 - 35 = 145^\circ$.

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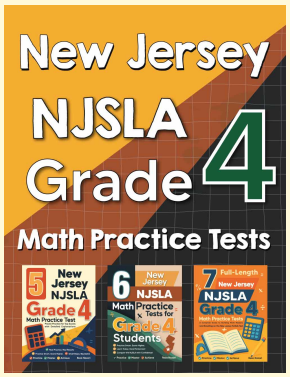

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