

**Kumon Math Challenge – Sample Questions
Grade 9**

Solve for x .

1. $-\frac{3}{4}x + \frac{1}{6} = -\frac{1}{3}x + 2$

A. $x = -\frac{16}{5}$

B. $x = -\frac{22}{5}$

C. $x = \frac{12}{5}$

D. $x = \frac{23}{4}$

Simplify the following.

2. $3x^5 \times 9x^{-5} \div 6x^{-1} =$

A. $\frac{9x}{2}$

B. $\frac{3x}{2}$

C. $\frac{9x}{4}$

D. $\frac{5x}{6}$

3. Find the vertex of the parabola:

$$y = -6x^2 + 12x + 10$$

A. $(-1, 16)$

B. $(1, -8)$

C. $(0, 10)$

D. $(1, 16)$

Factor the following

4. $(x + y)^2 - 5(x + y) - 14 =$

A. $(x + y - 7)(x + 2y + 2)$

B. $(x + y - 7)(x + y + 2)$

C. $(x + y + 7)(x - y - 2)$

D. $(x + y - 2)(x + y + 7)$

5. A telephone exchange is represented by the first 3 digits of a phone number, for example 394 - . How many different phone numbers can be created in a single telephone exchange if four numbers must follow the telephone exchange?

A. 100,000 phone numbers

B. 110,000 phone numbers

C. 10,000 phone numbers

D. 50,000 phone numbers

Simplify the following equation.

6. $(5\log_8 3)(\log_8 2)(\log_3 8) =$

A. $5\log_8 48$

B. $\frac{5}{3}$

C. $5\log_{24} 48$

D. 5

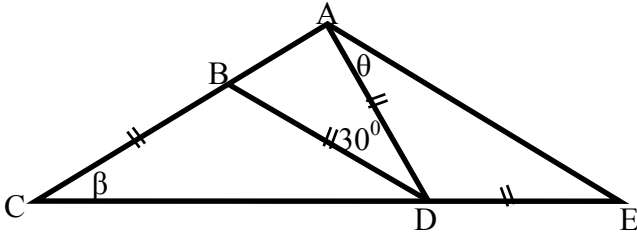
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Continue the pattern.

7. 720 360 240 180...

- A. 180
- B. 144
- C. 120
- D. 60

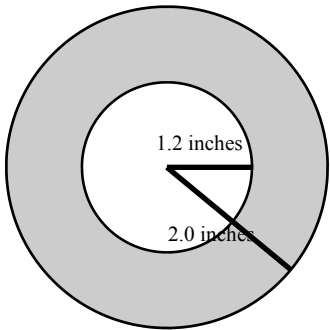
Find the unknown angles.



8. $\theta =$; $\beta =$

- A. $\theta = 37.5^\circ$; $\beta = 73.5^\circ$
- B. $\theta = 35.75^\circ$; $\beta = 47.5^\circ$
- C. $\theta = 33.75^\circ$; $\beta = 37.5^\circ$
- D. $\theta = 34.85^\circ$; $\beta = 39.2^\circ$

Find the area of the shaded region below. Use $\pi = 3.14$. Round answer to 2 decimal places.



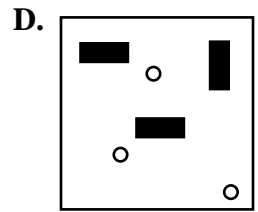
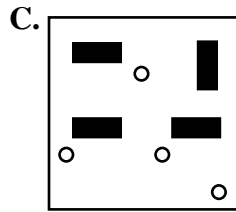
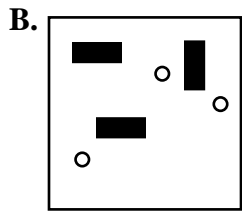
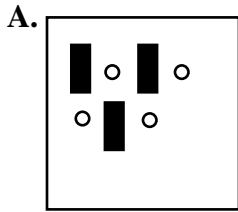
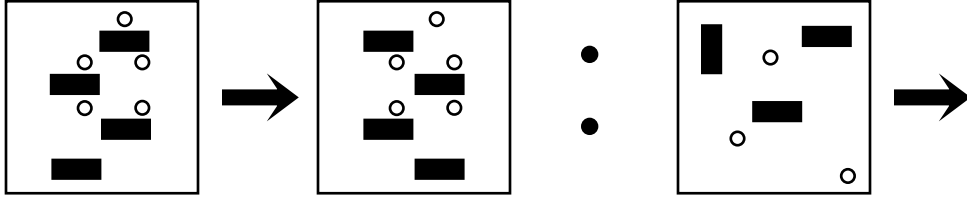
9. Area =

- A. 4.08 square inches
- B. 8.04 square inches
- C. 6.80 square inches
- D. 13 square inches

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Use the relationship between the first two pictures to find the last picture.

10.



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ANSWER KEY

1. B
2. A
3. D
4. B
5. C
6. B
7. B
8. C
9. B
10. D