

Halloween maths activities for CBSE Class 10: answers

CBSE Math Revision · CBSE Class 10 (Class 9 can try most of it) · 31 October · Teacher answers and notes

No calculator. Every answer works out exactly; use $\pi = 22/7$ where a question says so.

Teacher notes

- In the lantern parade, students find two roots of the quadratic: insist they reject the negative one with a reason.
- In the candle question, cancel before multiplying: $2156 \times 3 \div 539$ is $4 \times 3 = 12$ because $539 \times 4 = 2156$.
- The section formula slip to watch for: putting the 1 with the first point instead of the second.

Starter

1. **39**

- $a = 3, d = 4: a_{10} = 3 + 9 \times 4 = 39$

2. **10**

- $\sqrt{(6^2 + 8^2)} = \sqrt{100} = 10$

3. **1/2**

- The primes are 2, 3 and 5: 3 out of 6 outcomes, so $3/6 = 1/2$.

4. **616 cm²**

- $4 \times 22/7 \times 7 \times 7 = 616$

Task A: The lantern parade

a. **38**

- $a_{12} = 5 + 11 \times 3 = 38$

b. **258**

- $S_{12} = 12/2 \times (5 + 38) = 6 \times 43 = 258$

c. **15 rows**

- $n/2 \times (10 + 3(n - 1)) = 390$ gives $3n^2 + 7n - 780 = 0$.
- Discriminant = $49 + 9360 = 9409 = 97^2$, so $n = (-7 + 97)/6 = 15$.
- (The negative root does not make sense.)

Task B: Pumpkins and candles

a. **4851 cm³**

- $\frac{4}{3} \times 22/7 \times 10.5 \times 10.5 \times 10.5$
- $= \frac{4}{3} \times 22/7 \times 1157.625 = 4851$

b. **1386 cm²**

- $4 \times 22/7 \times 10.5 \times 10.5 = 4 \times 22/7 \times 110.25 = 1386$

c. **12 candles**

- Cylinder: $22/7 \times 7 \times 7 \times 14 = 2156 \text{ cm}^3$.
- One candle: $\frac{4}{3} \times 22/7 \times 3.5 \times 3.5 \times 3.5 = 539/3 \text{ cm}^3$.
- $2156 \div 539/3 = 2156 \times 3/539 = 12$

Task C: The sweet bowl

a. **1/4**

- 5 out of 20: $5/20 = 1/4$

b. **13/20**

- $1 - 7/20 = 13/20$

c. **1/3**

- 6 toffees out of 18 sweets: $6/18 = 1/3$

d. **4**

- $(8 + x)/(20 + x) = 1/2$ gives $16 + 2x = 20 + x$, so $x = 4$.

Task D: Haunted house maze

a. **10 units**

- $\sqrt{(6 + 2)^2 + (-3 - 3)^2} = \sqrt{64 + 36} = 10$

b. **P(0, 3/2)**

- $x = (1 \times 6 + 3 \times (-2))/4 = 0$
- $y = (1 \times (-3) + 3 \times 3)/4 = 6/4 = 3/2$

c. **Right angle at C; area 24 square units**

- $AC = 8$ and $BC = 6$, and $AB = 10$.
- $8^2 + 6^2 = 100 = 10^2$, so by the converse of Pythagoras the angle at C is 90° .
- Area = $\frac{1}{2} \times 8 \times 6 = 24$

Extension

1. **(0, -8/3)**

- Let the point be $(0, y)$. Then $2^2 + (y - 3)^2 = 6^2 + (y + 3)^2$.
- $4 + y^2 - 6y + 9 = 36 + y^2 + 6y + 9$, so $-12y = 32$ and $y = -8/3$.

2. **125%**

- The new radius is $1.5r$, so the new area is $4\pi(1.5r)^2 = 2.25 \times 4\pi r^2$.
- The area is multiplied by 2.25: an increase of 125%.

Every question is original and every answer was recomputed by computer before publishing.