

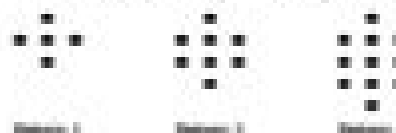
0 Level Math

4024/12

Paper 1

May June 2022

4. Illustration is a sequence of patterns using counters.



Pattern 1 Pattern 2 Pattern 3

Fig. 1 Complete the table

Pattern number	1	2	3	4	5
Number of counters	4	9	16	25	36

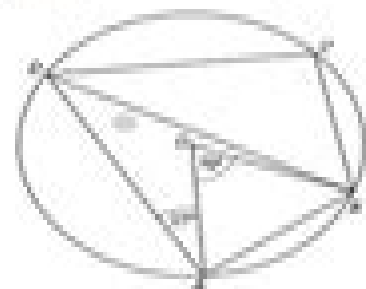
Fig. 2 Find an expression, in terms of n , for the number of counters in Pattern n .

$$\text{No. of Counters in } n \text{th Pattern } 4 + 4n + n^2$$

$$a_n = 2 + 3n$$

$$2 + 3n$$

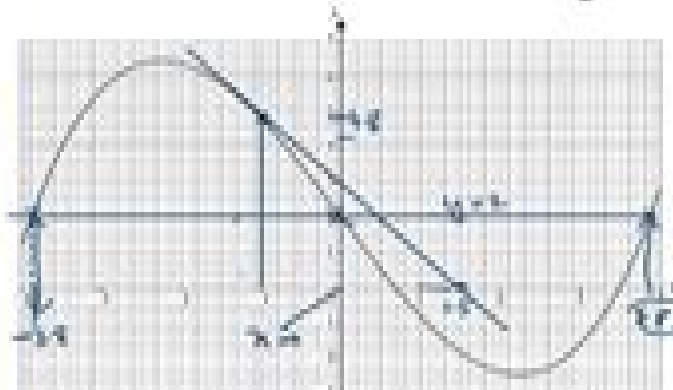
Fig. 3



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A. B. C. D. E. are points on the circle. Lines O A, O B, O C, O D, O E are drawn.

11. The graph of $y = \frac{1}{2}x^2 - 3x + 2$ is shown in Fig. 3. $y - 2 = \frac{1}{2}x^2 - 3x$



$$\frac{1}{2}x^2 - 3x + 2 = 0$$

12. By drawing a tangent, estimate the gradient of the curve at $x = 1.5$.

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in the nitration of bromobenzene a mixture of sulfuric acid and nitric acid react with one another nitric acid the weaker of the two acids will serve as base to form nitronium ion bromobenzene will attack the nitronium ion by nucleophilic attack

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explanation of the nitration of bromobenzene if the temperature of the reaction mixture exceeds 60 °C

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the bromine substituent in bromobenzene is an ortho para director the para position is favored due to steric effects in the reaction that takes place in this lab a nitro group is substituted onto bromobenzene at the para position to form 1-bromo-4-nitrobenzene

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over 5 minutes slowly pipet this bromobenzene into the icy cold nitration mixture HNO_3 3 h 2 so 4 in the 125 ml flask and stir continue to stir the reaction mixture in the ice bath for 30 minutes do not heat in a new 250 ml erlenmeyer

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on the right the arenium cation has a nitro set with incredibly small 0.6 angstrom bond distances this will result in an optimization failure as the atoms are even close for the programme to accommodate their electrons demonstration of creating the p arenium cation by the nitration of bromobenzene

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lab report 15 nitration of bromobenzene brynn abbott amp katie muerer bea0006 uah ch 336 02 september 21 2022 abstract in this experiment the electrophilic aromatic substitution mechanism was used to obtain 4-nitrobromobenzene and 2-nitrobromobenzene recrystallization was used to purify 4-nitrobromobenzene

nitration of bromobenzene the purpose of this lab was to - Jul 30 2023

the purpose of this lab was to observe where substituents are added on a benzene ring by way of electrophilic aromatic substitution the electrophilic source in the nitration of bromobenzene comes from a nitronium ion NO_2^+ which acts as the electrophilic species

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nitration of bromobenzene is an electrophilic aromatic substitution reaction the electrophile will be formed from 4.0 ml of nitric acid and 4.0 ml of sulfuric acid and will then react with 4.5 ml of bromobenzene this will produce o-bromonitrobenzene

and p bromonitrobenzene

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experimental spectra reaction a fluorobenzene stock fluorobenzene 1 h 1 h 19 f 19 f 13 c nmr fid for reference only sample 1 h 1 h 19 f 19 f 13 c nmr eas nitration of fluorobenzene crude product not available for submission for credit

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lab writeup the purpose of this lab was to observe where substituents are added on benzene ring way of electrophilic aromatic substitution the electrophilic

5 nitration lab docx lab 5 nitration of bromobenzene - Aug 19 2022

chem 2261 lab 5 nitration of bromobenzene introduction an electrophilic aromatic substitution reaction is an important process that allows for intermediate chemical structures to be used as precursors to pharmaceuticals and other industrially produced chemicals by adding different functional groups into an aromatic ring

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lab report 10 nitration of bromobenzene raekwon filmore cm 244 section 40 march 27 2018 introduction for this experiment nitration of bromobenzene was the focus of the lab the benzene is an aromatic compound and when it reacts with wither a mixture of sulfuric acid or nitric acid creates what is known as a nitro group