Ex 11.1

No calculators are permitted in this exercise.

Worked Example for Simple Questions

Name:

Which option shows the elements in set A **AND** in set B.

$A = \{5, 6, 7, 8, 9, 10\}$

$B = \{1, 3, 5, 7, 9\}$

* Look for the numbers in both sets

$\{5, 7, 9\}$

A	B	C
$\{1, 3, 5, 6, 7, 8, 9, 10\}$	$\{5, 7, 9\}$	$\{1, 3\}$

Question 1

Which option shows the elements in set A **AND** in set B.

$A = \{0, 2, 4, 7, 10\}$

$B = \{0, 1, 2, 3, 4, 5, 6\}$

Circle the correct option

A

$\{0, 2, 4\}$

B

$\{0, 1, 2, 3, 4, 5, 6, 7, 10\}$

C

$\{3, 7, 10\}$

Copyright © Maths Pathway 2025.

Question 2

Which option shows the elements in set A **AND** in set B.

$$A = \{10, 11, 12, 13, 14, 15, 16\}$$

$$B = \{11, 13, 15, 17, 19\}$$

Circle the correct option

A

$\{10, 11, 12, 13, 14, 15, 16, 17, 19\}$

B

$\{11, 13, 15\}$

C

$\{10, 17, 19\}$

Question 3

Which option shows the elements in set A **AND** in set B.

$$A = \{0, 2, 4, 6, 8, 10\}$$

$$B = \{2, 6, 7, 9, 10\}$$

Circle the correct option

A

$\{0, 7, 9\}$

B

$\{2, 6, 10\}$

C

$\{0, 2, 4, 6, 7, 8, 9, 10\}$

Copyright © Maths Pathway 2025.

Question 4

Which option shows the elements in set A **AND** in set B.

$$A = \{0, 2, 3, 5, 7\}$$

$$B = \{1, 2, 4, 5, 6, 7, 8\}$$

Circle the correct option

A

$\{2, 5, 7\}$

B

$\{0, 1, 2, 3, 4, 5, 6, 7, 8\}$

C

$\{0, 3, 6\}$

Question 5

Which option shows the elements in set A **AND** in set B.

$$A = \{0, 2, 4, 6, 8, 10\}$$

$$B = \{3, 6, 7, 8, 10\}$$

Circle the correct option

A

$\{6, 8, 10\}$

B

$\{2, 7, 4\}$

C

$\{0, 2, 3, 4, 6, 7, 8, 10\}$

Copyright © Maths Pathway 2025.

Worked Example for Standard Questions

Which option shows the elements in set X **OR** in set Y.

$X = \{11, 13, 15\}$

$Y = \{12, 13, 14, 15, 16\}$

already in the list since they are in set X.

A	B	C
$\{11, 12, 13, 13, 14, 15, 15, 16\}$	$\{11, 12, 13, 14, 15, 16\}$	$\{13, 15\}$

OR means the union : if a number appears in set X or in set Y, write it in the set. Do not write a number more than once.

X OR Y = { 11, 12, 13, 14, 15, 16 }

Copyright © Maths Pathway 2025.

Question 6

Which option shows the elements in set X **OR** in set Y?

$X = \{78, 79, 80\}$

$Y = \{79, 80, 81, 82, 83\}$

Circle the correct option

A

$\{78, 79, 80, 81, 82, 83\}$

B

$\{79, 80\}$

C

$\{78, 79, 79, 80, 80, 81, 82, 83\}$

Question 7

Which option shows the elements in set X **OR** in set Y?

$X = \{34, 36, 38\}$

$Y = \{36, 37, 38, 39, 40, 41\}$

Circle the correct option

A

$\{34, 36, 36, 37, 38, 38, 39, 40, 41\}$

B

$\{34, 36, 37, 38, 39, 40, 41\}$

C

$\{36, 38\}$

Copyright © Maths Pathway 2025.

Question 8

Which option shows the elements in set X **OR** in set Y?

$X = \{20, 22, 24\}$

$Y = \{21, 22, 23, 24, 25\}$

Circle the correct option

A

$\{20, 21, 22, 22, 23, 24, 24, 25\}$

B

$\{22, 24\}$

C

$\{20, 21, 22, 23, 24, 25\}$

Question 9

Which option shows the elements in set X **OR** in set Y?

$X = \{5, 6, 7, 8, 9\}$

$Y = \{1, 3, 5, 7\}$

Circle the correct option

A

$\{1, 3, 5, 6, 7, 8, 9\}$

B

$\{1, 3, 5, 5, 6, 7, 7, 8, 9\}$

C

$\{5, 7\}$

Copyright © Maths Pathway 2025.

Question 10

Which option shows the elements in set X **OR** in set Y?

$X = \{2, 4, 6, 8\}$

$Y = \{1, 2, 3, 4, 5, 6\}$

Circle the correct option

A

$\{1, 2, 2, 3, 4, 4, 5, 6, 6, 8\}$

B

$\{4, 6\}$

C

$\{1, 2, 3, 4, 5, 6, 8\}$

Copyright © Maths Pathway 2025.

Ex 11.3

No calculators are permitted in this exercise.

Worked Example for Simple Questions

A letter is chosen at random from the word:

F L A N E L L E T T E

Which option correctly shows the set of possible outcomes?

A

{F, L, A, N, E, L, E, T, E}

L and E are repeated

B

{F, L, A, N, E, L, L, E, T, T, E}

Letters are repeated

C

{F, L, A, N, E, T}

* Each letter only appears as a possible outcome once

Copyright © Maths Pathway 2025.

Experiments and Outcomes

Question 1

A letter is chosen at random from the word:

K O O K A B U R R A

Which option correctly shows the set of possible outcomes?

Circle the correct option

A

$\{K, O, K, A, B, U, R, A\}$

B

$\{K, O, A, B, U, R\}$

C

$\{K, O, O, K, A, B, U, R, R, A\}$

Question 2

A letter is chosen at random from the word:

B U C C A N E E R

Which option correctly shows the set of possible outcomes?

Circle the correct option

A

$\{B, U, C, C, A, N, E, E, R\}$

B

$\{B, U, C, C, A, N, E, R\}$

C

$\{B, U, C, A, N, E, R\}$

Question 3

A letter is chosen at random from the word:

H I C C U P P E D

Which option correctly shows the set of possible outcomes?

Circle the correct option

A

$\{H, I, C, C, U, P, E, D\}$

B

$\{H, I, C, U, P, E, D\}$

C

$\{H, I, C, C, U, P, P, E, D\}$

Question 4

A letter is chosen at random from the word:

D U M B B E L L

Which option correctly shows the set of possible outcomes?

Circle the correct option

A

$\{D, U, M, B, E, L\}$

B

$\{D, U, M, B, B, E, L, L\}$

C

$\{D, U, M, B, E, L, L\}$

Copyright © Maths Pathway 2025.

Question 5

A letter is chosen at random from the word:

C O R R O B B O R E E

Which option correctly shows the set of possible outcomes?

Circle the correct option

A

$\{C, O, R, R, O, B, B, O, R, E, E\}$

B

$\{C, O, R, B, E\}$

C

$\{C, O, R, O, B, O, R, E\}$

Copyright © Maths Pathway 2025.

Worked Example for Standard Questions

A make-up bag contains 3 matt lipsticks (M) and 5 glossy lipsticks (G).

Julie picks **two lipsticks** at random.

The possible outcomes are:

A	B	C
{M, G}	{MM, MG, GM, GG}	{M, N, N, G, G, G, G, G}

You can choose either a matt lipstick or a glossy lipstick.
There are 2 selections.
You could get a matt lipstick the 1st selection, then another matt lipstick.
MM
You could get a matt lipstick 1st, then a glossy lipstick.
MG
You could get a glossy lipstick 1st, then a matt lipstick
GM
Or, you could get a glossy lipstick 1st and 2nd selection.
GG
All the possible outcomes in a list are:
{MM, MG, GM, GG}
2 matt
matt, then glossy
glossy, then matt
2 glossy

Copyright © Maths Pathway 2025.

Question 6

A box contains 5 USB-A cables (A) and 3 USB-C cables (C).

Julie picks **two cables** at random.

The possible outcomes are:

Circle the correct option

A

{AA, AC, CA, CC}

B

{A, C}

C

{A, A, A, A, A, C, C, C}

Question 7

A kitchen drawer contains 6 towels (G) and 3 aprons (A).

Julie picks **two items** from the kitchen drawer at random.

The possible outcomes are:

Circle the correct option

A

{T, A}

B

{T, T, T, T, T, T, A, A, A}

C

{TT, TA, AT, AA}

Copyright © Maths Pathway 2025.

Question 8

A fish tank contains 4 goldfish (G) and 6 neon tetras (N) fish.

Julie picks **two fish** at random.

The possible outcomes are:

Circle the correct option

A

{G, N}

B

{GG, NG, GN, NN}

C

{G, G, G, G, N, N, N, N, N, N}

Question 9

A play pen contains 3 Labrador puppies (L) and 4 German Shepherd puppies (G).

Julie picks **two puppies** at random.

The possible outcomes are:

Circle the correct option

A

{LL, LG, GL, GG}

B

{L, G}

C

{L, L, L, G, G, G, G}

Copyright © Maths Pathway 2025.

Question 10

A first aid box contains 2 waterproof bandaids (W) and 5 fabric bandaids (F).

Julie picks **two bandaids** at random.

The possible outcomes are:

Circle the correct option

A

{W, W, F, F, F, F, F}

B

{WW, WF, FW, FF}

C

{W, F}

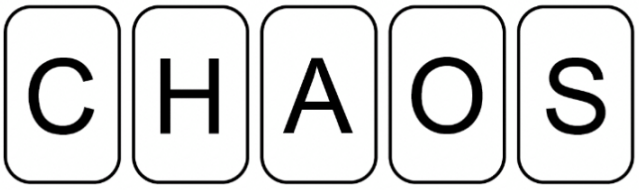
Copyright © Maths Pathway 2025.

EX 11.5

No calculators are permitted in this exercise.

Worked Example for Simple Questions

One of these cards is chosen at random.



What is the probability of choosing the card with an A on it?

$$\text{Probability}(\boxed{A}) = \frac{\text{Number of } \boxed{A} \text{ cards}}{\text{Total number of cards}}$$

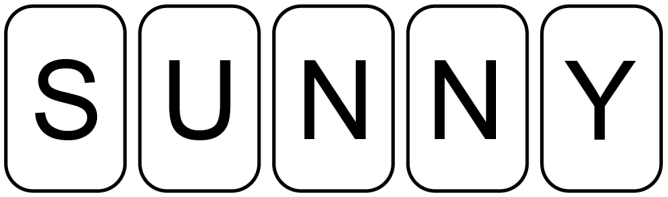
$$= \frac{1}{5}$$

$\frac{1}{5}$

Copyright © Maths Pathway 2025.

Question 1

One of these cards is chosen at random.

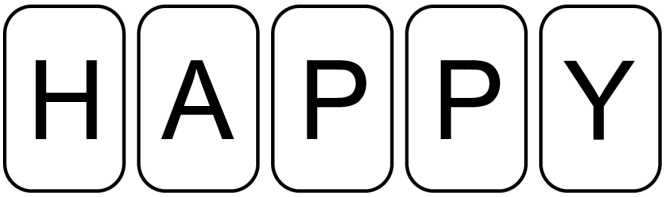


What is the probability of choosing the card with an N on it?

Fraction: ☐ / ☐

Question 2

One of these cards is chosen at random.



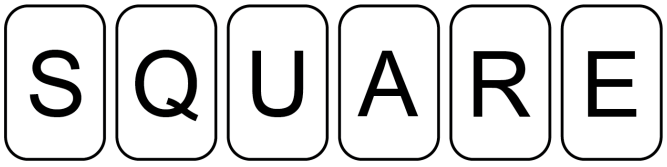
What is the probability of choosing the card with a P on it?

Fraction: ☐ / ☐

Copyright © Maths Pathway 2025.

Question 3

One of these cards is chosen at random.

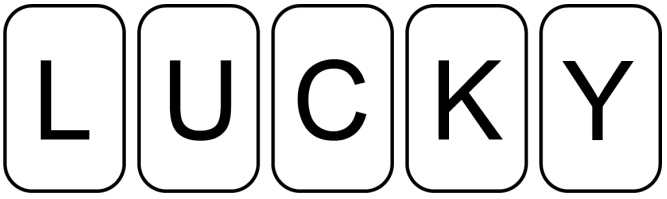


What is the probability of choosing the card with a Q on it?

Fraction: $\frac{\square}{\square}$

Question 4

One of these cards is chosen at random.

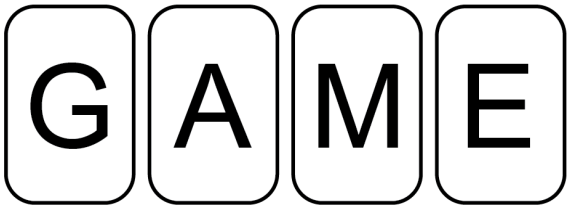


What is the probability of choosing the card with a K on it?

Fraction: $\frac{\square}{\square}$

Question 5

One of these cards is chosen at random.



What is the probability of choosing the card with an M on it?

Fraction: $\frac{\square}{\square}$

Copyright © Maths Pathway 2025.

Worked Example for Standard Questions

A letter from the word **FOCCACIA** is chosen at random.

What is the probability of choose a letter **C**?

$\frac{3}{8}$

Let C = choosing the letter C

$$Pr(C) = \frac{\text{favourable outcomes}}{\text{total number of outcomes}}$$

$$= \frac{3}{8}$$

3 ← three Cs in FOCCACIA (1 2 3)

8 ← eight letters in FOCCACIA (1 2 3 4 5 6 7 8)

Copyright © Maths Pathway 2025.

Question 6

A letter from the word **BLESS** is chosen at random.

What is the probability of choose a letter **S**?

Fraction: ☐/☐

Question 7

A letter from the word **ACCURACY** is chosen at random.

What is the probability of choose a letter **C**?

Fraction: ☐/☐

Question 8

A letter from the word **ADDRESS** is chosen at random.

What is the probability of choose a letter **D**?

Fraction: ☐/☐

Question 9

A letter from the word **EERIE** is chosen at random.

What is the probability of choose a letter **E**?

Fraction: ☐/☐

Copyright © Maths Pathway 2025.

Question 10

A letter from the word **BLUBBER** is chosen at random.

What is the probability of choose a letter **B**?

Fraction: $\frac{\square}{\square}$

Copyright © Maths Pathway 2025.

Ex 11.7

A scientific calculator is permitted throughout this exercise.

Worked Example for Simple Questions

Calculate the **mean** of the given data set:

12 8 5 9 15

5 data values

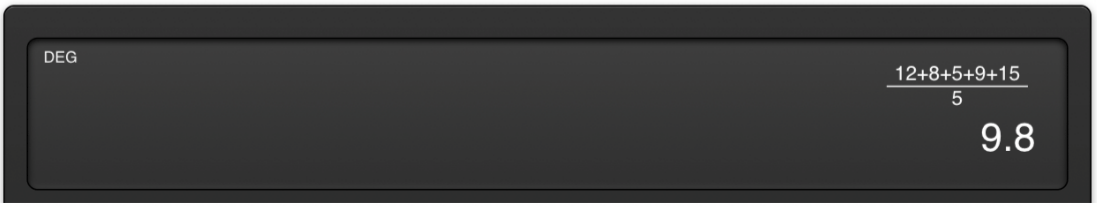
Answer:

9.8

$$\text{mean} = \frac{\text{sum of data values}}{\text{Number of data values}}$$

$$= \frac{12+8+5+9+15}{5}$$

$$= 9.8$$



Question 1

Calculate the **mean** of the given data set:

3 5 7 8 14

Question 2

Calculate the **mean** of the given data set:

2 7 3 5 9

Question 3

Calculate the **mean** of the given data set:

12 1 3 16 2

Question 4

Calculate the **mean** of the given data set:

19 4 17 10 6

Copyright © Maths Pathway 2025.

Question 5

Calculate the **mean** of the given data set:

$$3 \quad 2 \quad 1 \quad 0 \quad 2$$

Copyright © Maths Pathway 2025.

Worked Example for Standard Questions

Calculate the mean of the data set, correct to two decimal places.

$20,\ 28,\ 11,\ 29,\ 32,\ 23$

6 data values

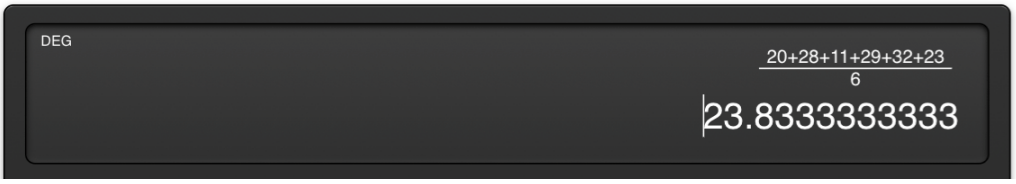
mean = 23·83

$$\text{mean} = \frac{\text{sum of data values}}{\text{number of data values}}$$

$$= \frac{20+28+11+29+32+23}{6}$$

$$= 23.83$$

Check



Question 6

Calculate the mean of the data set, correct to two decimal places.

$16,\ 18,\ 32,\ 25,\ 19,\ 24,\ 31$

mean =

Question 7

Calculate the mean of the data set, correct to two decimal places.

$16,\ 28,\ 17,\ 23,\ 14,\ 29,\ 31,\ 11$

mean =

Copyright © Maths Pathway 2025.

Question 8

Calculate the mean of the data set, correct to two decimal places.

$$24,\ 33,\ 15,\ 29,\ 17,\ 30,\ 23,\ 16$$

mean =

Question 9

Calculate the mean of the data set, correct to two decimal places.

$$25,\ 31,\ 15,\ 22,\ 7,\ 13,\ 17$$

mean =

Question 10

Calculate the mean of the data set, correct to two decimal places.

$$32,\ 49,\ 41,\ 45$$

mean =

Copyright © Maths Pathway 2025.

Ex 11.9

No calculators are permitted in this exercise.

Worked Example for Simple Questions

Find the **mode** of the data set:

4 6 7 8 8 8 11 15

8 appears 3 times

The mode is the most common data value in the data set.
The mode is 8.

Answer:

8

Question 1

Find the **mode** of the data set:

2 3 6 6 6 7 10 11

Question 2

Find the **mode** of the data set:

2 5 5 5 7 8 9 12

Question 3

Find the **mode** of the data set:

2 5 7 7 7 8 10 15

Question 4

Find the **mode** of the data set:

2 5 6 9 10 10 10 13

Copyright © Maths Pathway 2025.

Question 5

Find the **mode** of the data set:

$$0 \quad 1 \quad 1 \quad 1 \quad 2 \quad 3 \quad 4 \quad 8$$

Copyright © Maths Pathway 2025.

Worked Example for Standard Questions

What is the **mode** of the data set?

$2,\ 1,\ 5,\ 4,\ 5,\ 6,\ 5,\ 9,\ 2$

mode = 5

* The mode is the most common data value in the data set.
5 appears 3 times, so is most common
mode = 5

Question 6

What is the **mode** of the data set?

$4,\ 3,\ 5,\ 4,\ 5,\ 3,\ 8,\ 3,\ 7$

mode = ☐

Question 7

What is the **mode** of the data set?

$6,\ 3,\ 7,\ 3,\ 5,\ 7,\ 8,\ 9,\ 7$

mode = ☐

Question 8

What is the **mode** of the data set?

$9,\ 3,\ 7,\ 3,\ 5,\ 9,\ 8,\ 9,\ 2$

mode = ☐

Question 9

What is the **mode** of the data set?

$2,\ 3,\ 9,\ 8,\ 3,\ 7,\ 8,\ 7,\ 8,\ 9$

mode = ☐

Copyright © Maths Pathway 2025.

Question 10

What is the **mode** of the data set?

$$8,\ 2,\ 5,\ 4,\ 5,\ 9,\ 5,\ 8,\ 2$$

mode $=$ ☐

Copyright © Maths Pathway 2025.

Ex 11.11

A scientific calculator is permitted throughout this exercise.

Worked Example for Simple Questions

Find the **median** of the data set:

2 3 3 5 8 9 12

median

With the data set in numerical order, the median is the data value in the middle.

Answer:

5

Question 1

Find the **median** of the data set:

8 9 9 11 16 17 19

Question 2

Find the **median** of the data set:

2 5 6 10 14 15 19

Question 3

Find the **median** of the data set:

1 1 4 6 8 13 18

Question 4

Find the **median** of the data set:

2 5 6 9 11 13 14

Question 5

Find the **median** of the data set:

0 3 4 6 7 8 10

Copyright © Maths Pathway 2025.

Worked Example for Standard Questions

What is the **median** of this data set?

12 5 18 13 6 5 14 10

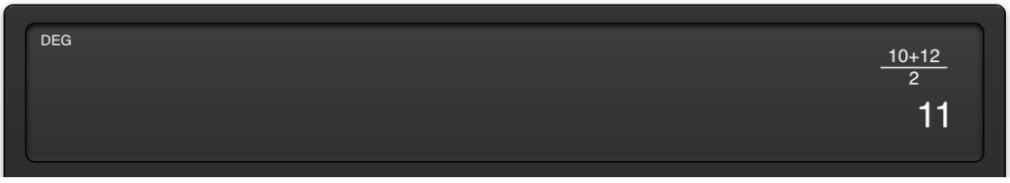
median = 11

1. Arrange the data in ascending order.

5, 5, 6, 10, 12, 13, 14, 18

2. Find the middle of the data set.

median = $\frac{10+12}{2} = 11$



Question 6

What is the **median** of this data set?

9 12 4 8 10 4 6 1

median = ☐

Question 7

What is the **median** of this data set?

12 6 5 8 12 7 15 7 14

median = ☐

Copyright © Maths Pathway 2025.

Question 8

What is the **median** of this data set?

$19 \quad 22 \quad 27 \quad 18 \quad 23 \quad 19 \quad 17 \quad 21 \quad 23$

median $=$ ☐

Question 9

What is the **median** of this data set?

$108 \quad 103 \quad 100 \quad 105 \quad 110 \quad 105$

median $=$ ☐

Question 10

What is the **median** of this data set?

$0 \quad 2 \quad 1 \quad 3 \quad 0 \quad 4 \quad 1 \quad 2 \quad 2 \quad 3$

median $=$ ☐

Copyright © Maths Pathway 2025.