

MULTI
MATHS

The title 'MULTI MATHS' is rendered in large, 3D block letters. A boy is sitting on the 'M' of 'MATHS' reading a book. A girl is standing on the 'S' holding a large triangle. A boy is standing behind the 'T' holding a pen and a notebook. A girl is standing behind the 'I' holding a notebook. The letters are arranged in two rows: 'MULTI' on top and 'MATHS' below it.

Workbook



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Preface



Ultimaths - Workbook 6

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ULTI MATHS is a mathematics learning series for primary school students. The contents are systematically arranged according to the ability of the child, which can be applied in everyday life, and can be used as preparation for the next level.



ULTI MATHS uses an international standard of mathematical teaching and learning approaches, which have been proven to bring children success in learning mathematics. The Concrete-Pictorial-Abstract approach introduces new concepts with the use of appropriate manipulatives, before moving to pictorials and abstract representations. The development of topics across the levels in spiral progression approach helps learners acquire a new concept by building on previously learned concepts. The focus on Problem Solving by promoting the use of bar models, empowers students to develop visualization skills to better understand word problems before solving them.



ULTI MATHS provides active, fun, and collaborative mathematics learning with lots of activities and games. These learning experiences will enable students to acquire and apply concepts and skills, develop critical thinking skills, and positive attitudes towards mathematics.

Using This Book

Ultimaths has some special features to help students learn and use this book.


Exercise

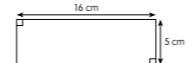
Independent exercises to strengthen and consolidate the concepts learned in Textbook.

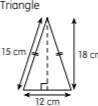
Unit 5 Area and Perimeter


Exercise 1 Area And Perimeter Of Composite Figures


1 Find the area and perimeter of each of the figures.


a Square


b Rectangle


c Triangle


d Circle [Take $\pi = \frac{22}{7}$]


e Semicircle [Take $\pi = 3.14$]


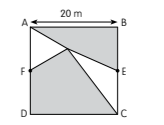
f Quadrant [Leave your answer correct to 2 decimal places]


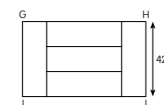
88 Unit 5 Area and Perimeter

Something More Exciting!

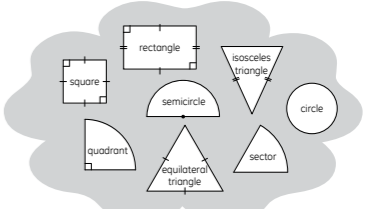
More challenging practice to stimulate higher order thinking.

Something More Exciting

A ABCD is a square. E and F are midpoints of BC and AD. What is the total area of the shaded parts?


B GHJ is a rectangle. It contains 5 identical rectangles. What is the area of the figure?


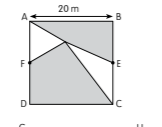
What Do You Remember?

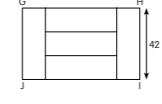


Use as many of the given shapes to come up with the "Most Creative Robot". Allocate dimensions to your Robot. Work out the area and perimeter of your Robot. Exchange with others and work out their Robots for more practice.

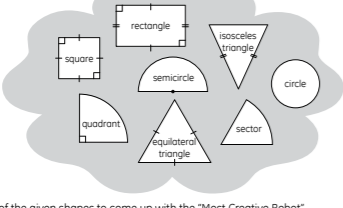
94 Unit 5 Area and Perimeter

Something More Exciting

A ABCD is a square. E and F are midpoints of BC and AD. What is the total area of the shaded parts?


B GHJ is a rectangle. It contains 5 identical rectangles. What is the area of the figure?


What Do You Remember?











Use as many of the given shapes to come up with the "Most Creative Robot". Allocate dimensions to your Robot. Work out the area and perimeter of your Robot. Exchange with others and work out their Robots for more practice.









94 Unit 5 Area and Perimeter

What Do You Remember?

This feature is for reflection of what have been learnt.

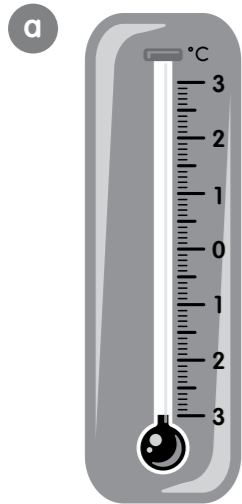
Contents

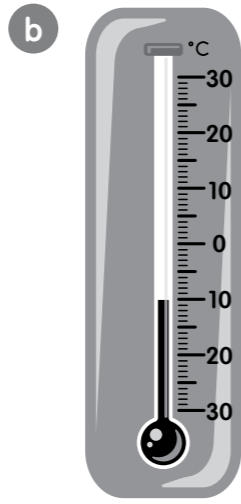
Unit 1	Negative Numbers	
Exercise 1	Understanding Negative Numbers	2
Exercise 2	Addition Involving Negative Numbers	7
Exercise 3	Subtraction Involving Negative Numbers	11
Exercise 4	Multiplication Involving Negative Numbers	17
Exercise 5	Division Involving Negative Numbers	24
	Something More Exciting	29
	What Do You Remember?	29
Unit 2	Fractions	
Exercise 1	Four Operations With Fractions	30
Exercise 2	Dividing By A Proper Fraction	37
Exercise 3	Word Problems	41
	Something More Exciting	44
	What Do You Remember?	44
Unit 3	Order of Operations	
Exercise 1	Order Of Operations	45
Exercise 2	Word Problems (1)	53
Exercise 3	Word Problems (2)	56
	Something More Exciting	59
	What Do You Remember?	59
Unit 4	Circles	
Exercise 1	Parts Of A Circle	60
Exercise 2	Circumference Of A Circle	65
Exercise 3	Perimeter Of A Semicircle And A Quadrant	72
Exercise 4	Area Of A Circle	78
Exercise 5	Area Of A Semicircle And A Quadrant	83
	Something More Exciting	87
	What Do You Remember?	87

Unit 5	Area and Perimeter	
Exercise 1	Area And Perimeter Of Composite Figures	88
	Something More Exciting	94
	What Do You Remember?	94
Unit 6	Surface Area and Volume of Solids	
Exercise 1	Solids	95
Exercise 2	Nets Of Solids	99
Exercise 3	Surface Area Of Solids	105
Exercise 4	Volume Of Solids	108
Exercise 5	Volume Of Composite Solids	116
	Something More Exciting	118
	What Do You Remember?	118
Unit 7	Mean, Median and Mode	
Exercise 1	Understanding Mean Or Average	119
Exercise 2	Word Problems	124
Exercise 3	Understanding Median	128
Exercise 4	Understanding Mode	131
	Something More Exciting	134
	What Do You Remember?	134
	Revision I	
	Section A	135
	Section B	138
	Section C	141
	Revision II	
	Section A	143
	Section B	146
	Section C	149

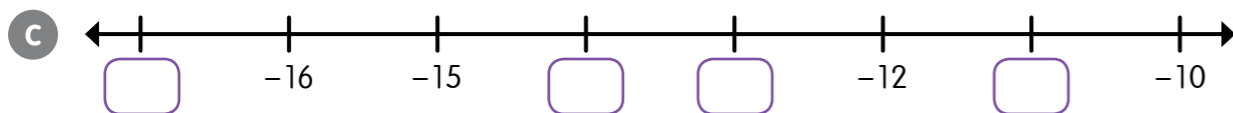
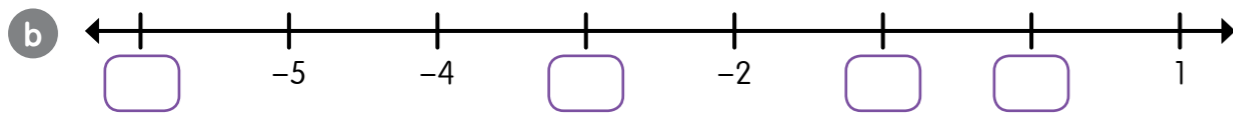
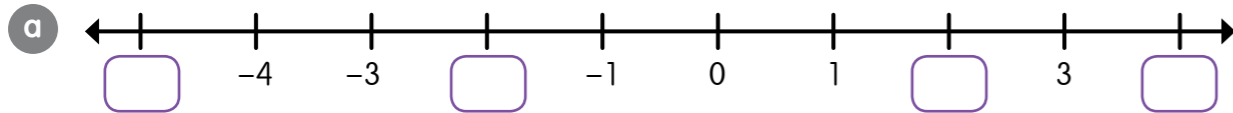
Exercise 1 Understanding Negative Numbers

1 Write out the following readings.

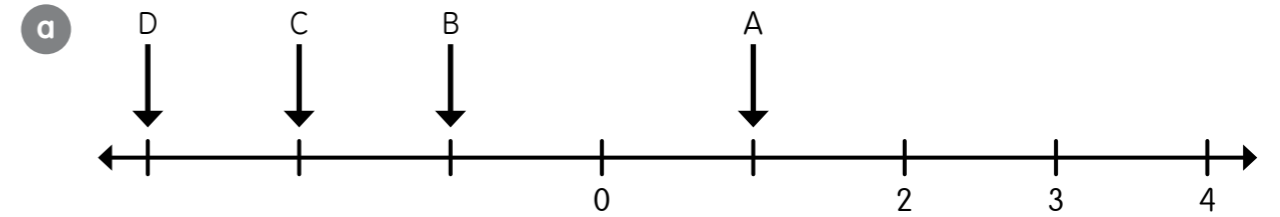




2 Fill in the missing numbers on each number line.



3 State what number each letter represents. Then fill in the correct symbol > or < in each circle.



A represents

C represents

B represents

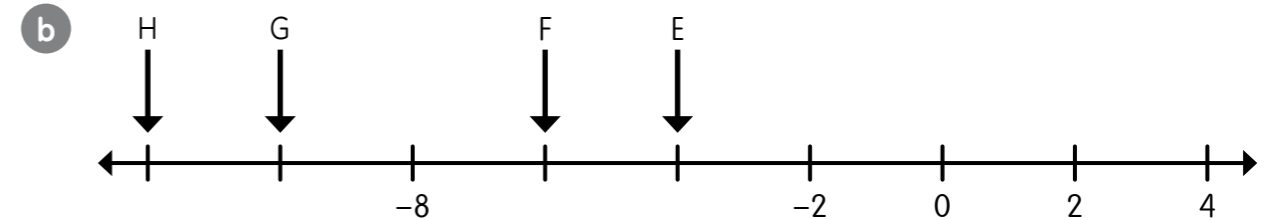
D represents

A B

D C

B C

D A



E represents

G represents

F represents

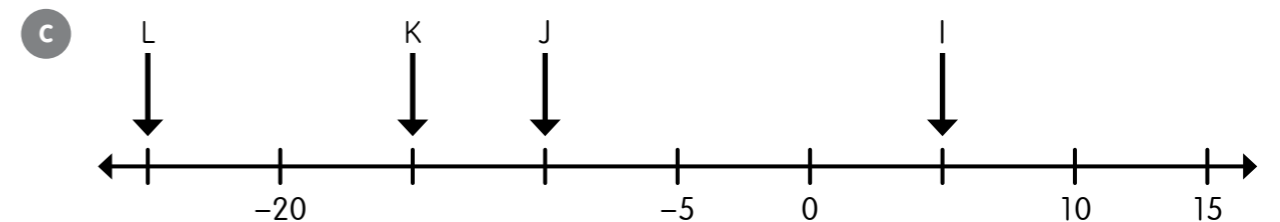
H represents

E F

G F

H G

H E



I represents

K represents

J represents

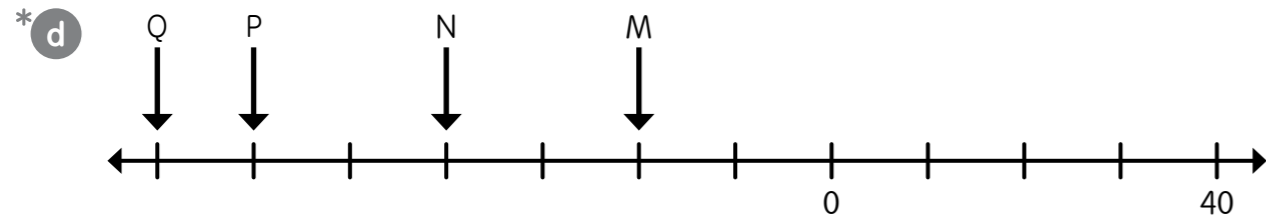
L represents

I L

J I

J L

K I



M represents

P represents

N represents

Q represents

P M

M N

Q N

N M

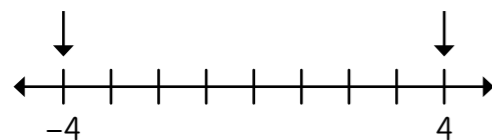
4 a Arrange the numbers in 3a in ascending order.

b Arrange the numbers in 3c in descending order.

c Combine the numbers from 3a and 3b and arrange them in descending order.

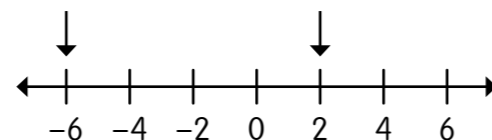
5 Compare the numbers.

a Which is smaller?



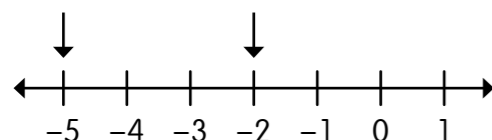
_____ is smaller than _____.

b Which is greater?



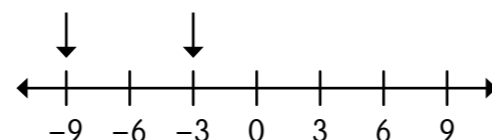
_____ is greater than _____.

c Which is greater?



_____ is greater than _____.

d Which is smaller?



_____ is smaller than _____.

6 Fill in each box with the symbol $>$, $<$ or $=$.

a 2 4

b 0 -6

c 12 -12

d 6 -18

e -45 45

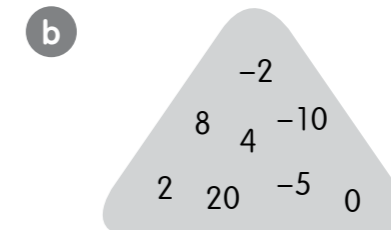
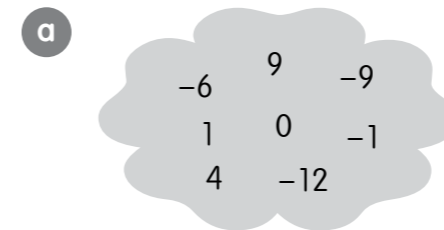
f -64 -4

g -25 -11

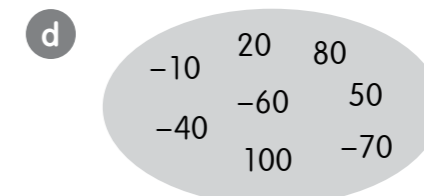
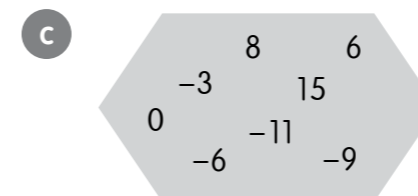
h -16 -20

i -19 -21

7 Arrange the numbers in order, starting from the smallest.



8 Arrange the numbers in order, starting from the greatest.



9 Complete the following number patterns and state each pattern.

a $-15, -12, -9, \underline{\hspace{1cm}}, \underline{\hspace{1cm}}, 0, \underline{\hspace{1cm}}, 6, 9$

Pattern

b $-36, \underline{\hspace{1cm}}, \underline{\hspace{1cm}}, -30, -28, -26, \underline{\hspace{1cm}}, -22, -20$

c $-66, -60, \underline{\hspace{1cm}}, -48, \underline{\hspace{1cm}}, -36, \underline{\hspace{1cm}}, -24, -18$

d $-7, -5, -3, \underline{\hspace{1cm}}, \underline{\hspace{1cm}}, 3, 5, 7, 9$

e $-15, \underline{\hspace{1cm}}, \underline{\hspace{1cm}}, 0, 5, \underline{\hspace{1cm}}, 15, 20, 25$

*f $-66, \underline{\hspace{1cm}}, \underline{\hspace{1cm}}, \underline{\hspace{1cm}}, -26, -16, \underline{\hspace{1cm}}, \underline{\hspace{1cm}}, 14$

Exercise 2 Addition Involving Negative Numbers

1 Add the following. Use the discs to help you.


a $-3 + 8$

-3 : 

8 : 

Total $\rightarrow (-3) + 8 = \square$

b $-9 + 5$

-9 : 

5 : 

Total $\rightarrow -9 + 5 = \square$

c $-5 + 2$

-5 : 

2 : 

Total $\rightarrow -5 + 2 = \square$

d $6 + (-3)$

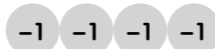
6 : 

-3 : 

Total $\rightarrow 6 + (-3) = \square$

e $-7 + (-4)$

-7 : 

-4 : 

Total $\rightarrow -7 + (-4) = \square$

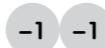
f $-4 + (-4)$

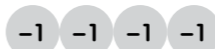
-4 : 

-4 : 

Total $\rightarrow -4 + (-4) = \square$


g $-2 + (-4)$

-2 : 

-4 : 

Total $\rightarrow -2 + (-4) = \square$

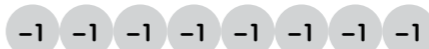
h $-1 + 4$

-1 : 

4 : 

Total $\rightarrow -1 + 4 = \square$

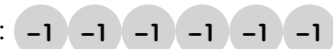
i $-8 + 4$

-8 : 

4 : 

Total $\rightarrow -8 + 4 = \square$

j $-6 + 8$

-6 : 

8 : 

Total $\rightarrow -6 + 8 = \square$

2 Draw in discs to add the following.

a $-5 + (-3)$

-5:

-3:

Sum $\rightarrow -5 + (-3) = \square$

c $-7 + (-1)$

-7:

-1:

Sum $\rightarrow -7 + (-1) = \square$

e $-4 + (-4)$

-4:

-4:

Sum $\rightarrow -4 + (-4) = \square$

g $-2 + (-9)$

-2:

-9:

Sum $\rightarrow -2 + (-9) = \square$

b $-6 + 5$

-6:

5:

Sum $\rightarrow -6 + 5 = \square$

d $3 + (-3)$

3:

-3:

Sum $\rightarrow 3 + (-3) = \square$

f $9 + (-6)$

9:

-6:

Sum $\rightarrow 9 + (-6) = \square$

h $-1 + (-5)$

-1:

-5:

Sum $\rightarrow -1 + (-5) = \square$

3 Solve the following.

a $-11 + 15 = \square$

c $-16 + (-4) = \square$

e $-17 + (-2) = \square$

g $-18 + 4 = \square$

i $-22 + (-10) = \square$

b $14 + (-10) = \square$

d $20 + (-6) = \square$

f $-12 + 4 = \square$

h $-6 + (-6) = \square$

j $13 + (-4) = \square$

4 Fill in the missing parts.

a $-8 + \square = -10$

c $\square + 6 = -4$

e $\square + (-5) = -11$

g $9 + \square = 7$

b $-13 + \square = -10$

d $6 + \square = 0$

f $12 + \square = 7$

h $\square + (-4) = -8$

5 Add.

a $10 + (-15)$

b $26 + (-40)$

c $-16 + (-24)$

d $-35 + (-54)$

e $-25 + 15$

f $-76 + 40$

* **6** A is a whole number with two digits.
It is a negative number between -15 to -5 .
It is divisible by 6.
What is A?

* **7** B is a negative whole number.
It is a between -10 and -2 .
It is an even number divisible by 4.
What is B?

* **8** C is a negative whole number. It lies between -20 and -10 .
It is an odd number divisible by 5.
What is C?

* **9** (a) What is the sum of A and B?
(b) What is the sum of A and C?
(c) What is the sum of B and C?

Exercise 3 Subtraction Involving Negative Numbers

1 Subtract the following. Use the discs to help you.

a $-5 - (-2)$

-5 : $-1 -1 -1 -1 -1$
 $-(-2)$: $-1 -1$

-5 : $-1 -1 -1$
 2 :

Difference $\rightarrow -5 - (-2) = \square$

b $-6 - (-5)$

-6 : $-1 -1 -1 -1 -1 -1$
 $-(-5)$: $-1 -1 -1 -1 -1$

-6 : $-1 -1 -1$
 5 :

Difference $\rightarrow -6 - (-5) = \square$

c $3 - 4$

3 : $1 1 1$
 $-(4)$: $-1 -1 -1 -1$

3 : $1 1 1$
 -4 : $-1 -1 -1 -1$

Difference $\rightarrow 3 - 4 = \square$

d $5 - 6$

5 : $1 1 1 1 1$
 $-(6)$: $-1 -1 -1 -1 -1 -1$

5 : $1 1 1 1 1$
 -6 : $-1 -1 -1 -1 -1 -1$

Difference $\rightarrow 5 - 6 = \square$

e $8 - 7$

8 : $1 1 1 1 1 1 1 1$
 $-(7)$: $-1 -1 -1 -1 -1 -1 -1$

8 : $1 1 1 1 1 1 1 1$
 -7 : $-1 -1 -1 -1 -1 -1 -1$





Difference $\rightarrow 8 - 7 = \square$

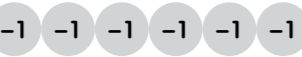

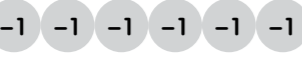

f $-6 - (-9)$

-6 : $-1 -1 -1 -1 -1 -1$
 $-(-9)$: $-1 -1 -1 -1 -1 -1 -1 -1 -1$

-6 : $-1 -1 -1 -1 -1 -1$
 9 : $1 1 1 1 1 1 1 1 1$





Difference $\rightarrow -6 - (-9) = \square$


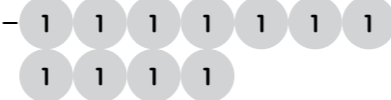

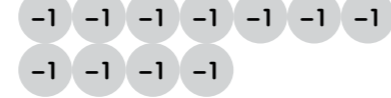
g $-5 - (-1)$
 -5 : 
 $-(-1)$: 
 ↓
 -5 : 
 1 : 
 Difference $\rightarrow -5 - (-1) = \square$

i $-6 - 4$
 -6 : 
 $-(4)$: 
 ↓
 -6 : 
 -4 : 
 Total $\rightarrow -6 - 4 = \square$

2 Draw in discs to subtract the following.

a $-3 - (-4)$
 -3 :
 $-(-4)$:
 ↓
 -3 :
 4 :
 So, $-3 - (-4) = \square$.

h $6 - 4$
 6 : 
 $-(4)$: 
 ↓
 6 : 
 -4 : 
 Difference $\rightarrow 6 - 4 = \square$

i $7 - 11$
 7 : 
 $-(11)$: 
 ↓
 7 : 
 -11 : 
 Total $\rightarrow 7 - 11 = \square$

b $-6 - 2$
 -6 :
 $-(2)$:
 ↓
 -6 :
 -2 :
 So, $(-6) - 2 = \square$.

c $-2 - (-7)$
 -2 :
 $-(-7)$:
 ↓
 -2 :
 7 :
 So, $-2 - (-7) = \square$.

e $5 - 10$
 5 :
 $-(10)$:
 ↓
 5 :
 -10 :
 So, $5 - 10 = \square$.

g $-1 - (-2)$
 -1 :
 $-(-2)$:
 ↓
 -1 :
 2 :
 So, $-1 - (-2) = \square$.

d $-5 - 10$
 -5 :
 $-(10)$:
 ↓
 -5 :
 -10 :
 So, $-5 - 10 = \square$.

f $-8 - (-1)$
 -8 :
 $-(-1)$:
 ↓
 -8 :
 1 :
 So, $(-8) - (-1) = \square$.

h $-2 - 1$
 -2 :
 $-(1)$:
 ↓
 -2 :
 -1 :
 So, $-2 - 1 = \square$.

i $-10 - (-1)$

$-10:$

$-(-1):$



$-10:$

$1:$

So, $-10 - (-1) = \square$.

i $-2 - (-1)$

$-2:$

$-(-1):$



$-2:$

$1:$

So, $-2 - (-1) = \square$.

3 Solve the following.

a $10 - 5$

b $3 - 8$

c $-10 - 5$

d $-3 - 8$

e $-10 - (-5)$

f $-3 - (-8)$

g $-4 - (-3)$

h $-4 - 2$

i $4 - (-8)$

i $-6 - 1$

4 Fill in the missing parts.

a $-12 - \square = -16$

b $\square - (-9) = 10$

c $\square - 6 = -2$

d $-6 - \square = -8$

e $\square - (-3) = -6$

f $\square - (-3) = 13$

g $-11 - \square = -5$

h $-8 - \square = 0$

5 Subtract.

a $50 - (-10)$

b $-80 - 35$

c $-100 - (-20)$

d $70 - (-25)$

e $-64 - (-16)$

f $17 - (-13)$

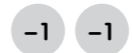
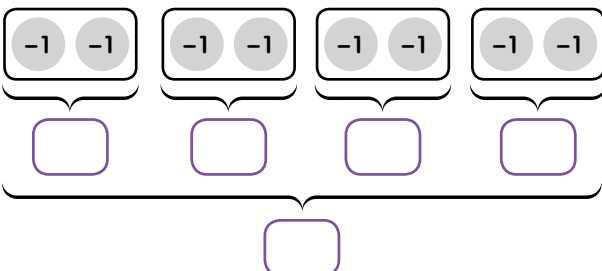
- 6 a What is the negative of 6?
 b What is the negative of (-6)?

- 7 a What is the negative of negative 2?
 b What is the negative of negative 3?
 c Solve $-(-2) - (-3)$.

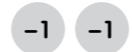
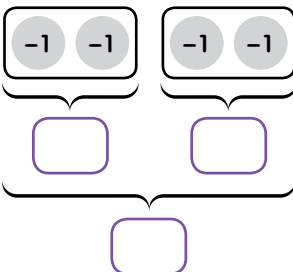
- 8 a What is the negative of 5?
 b What is the negative of negative 10?
 c Solve $5 - (-10)$.

Exercise 4 Multiplication Involving Negative Numbers


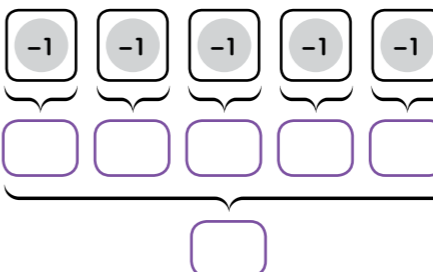
1 Multiply the following. Use the discs to help you.

a $4 \times (-2)$
 -2 : 
 $4 \times (-2)$: 

So, $4 \times (-2) = \square$.

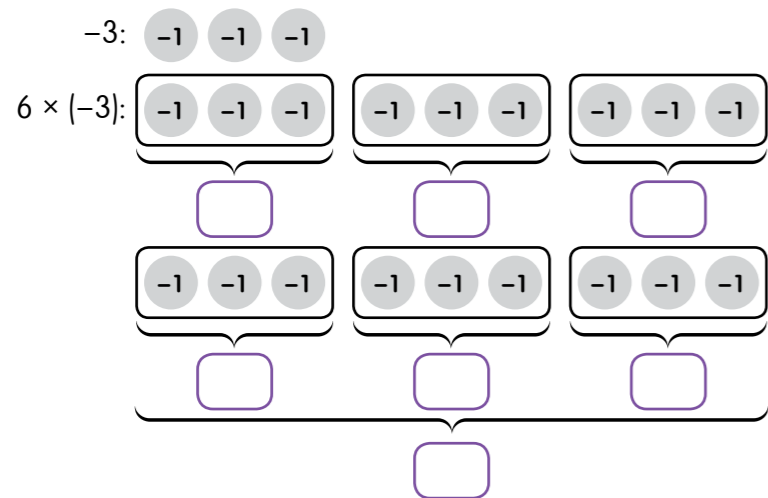
b $2 \times (-2)$
 -2 : 
 $2 \times (-2)$: 

So, $2 \times (-2) = \square$.

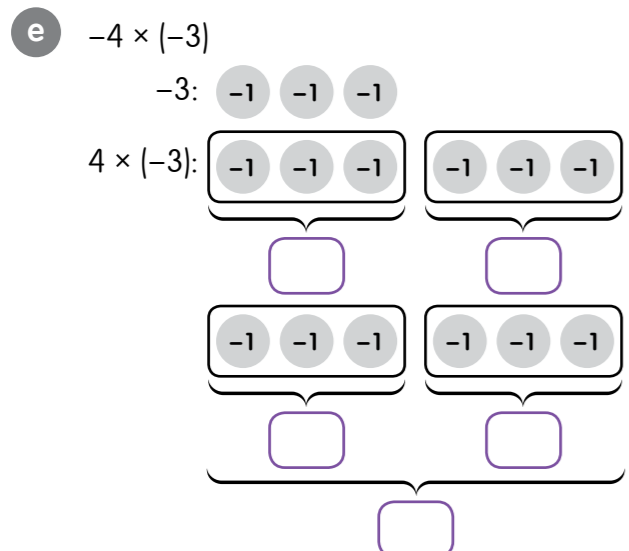
c $5 \times (-1)$
 -1 : 
 $5 \times (-1)$: 

So, $5 \times (-1) = \square$.

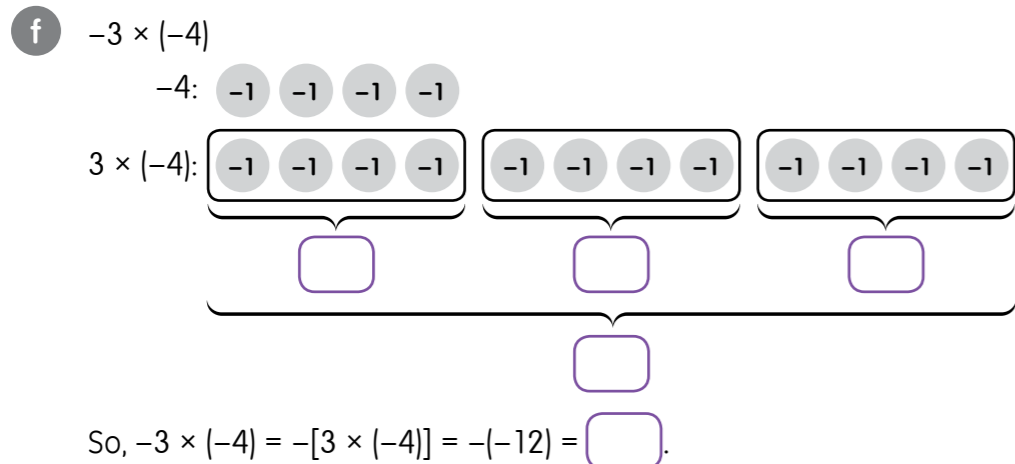
d -3×6



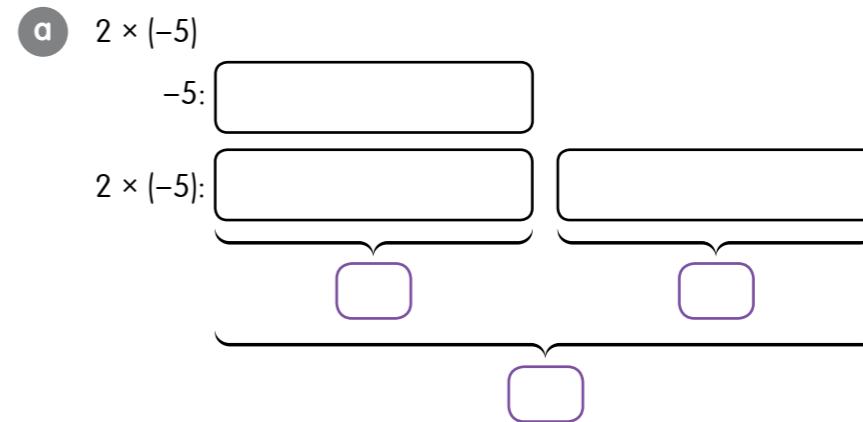
So, $6 \times (-3) = \boxed{}$.



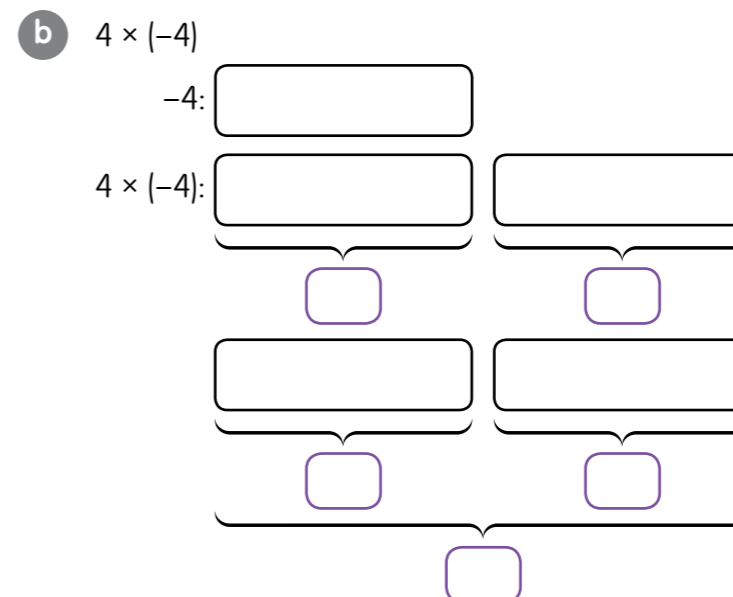
So, $-4 \times (-3) = -[4 \times (-3)] = -(-12) = \boxed{}$.



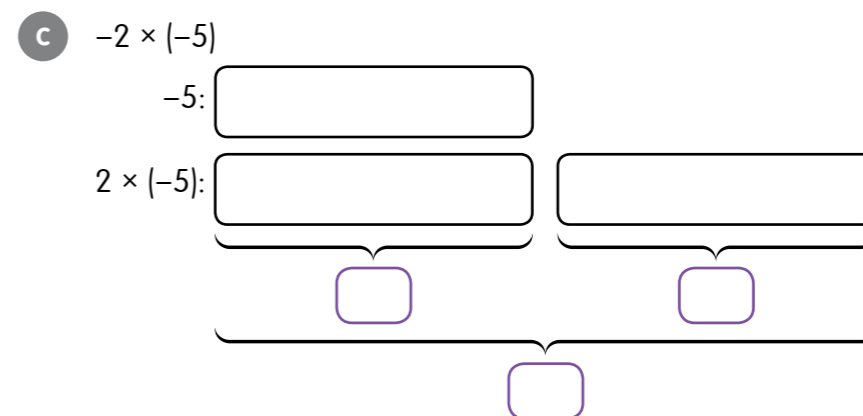
2 Draw in discs to multiply the following.



So, $2 \times (-5) = \boxed{}$.

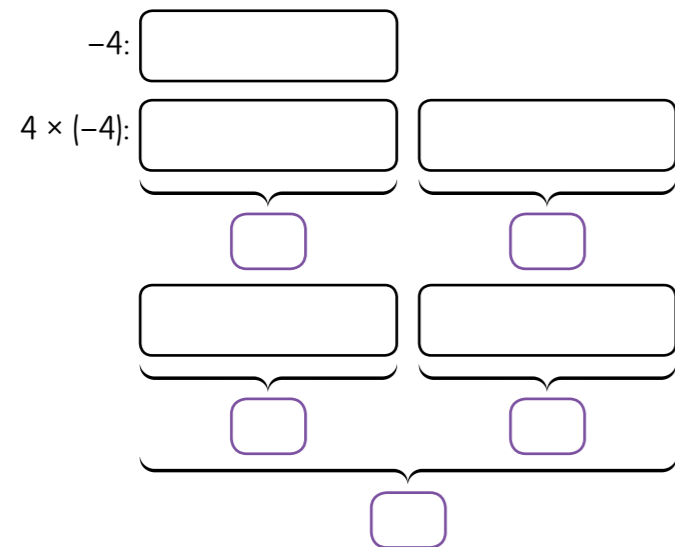


So, $4 \times (-4) = \boxed{}$.



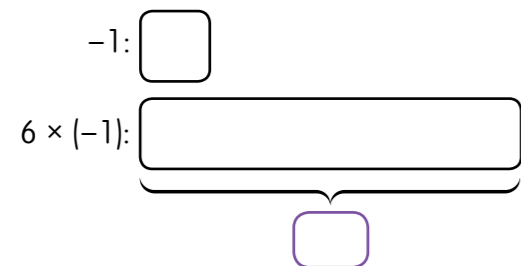
So, $-2 \times (-5) = -[2 \times (-5)] = -(\boxed{}) = \boxed{}$.

d $-4 \times (-4)$



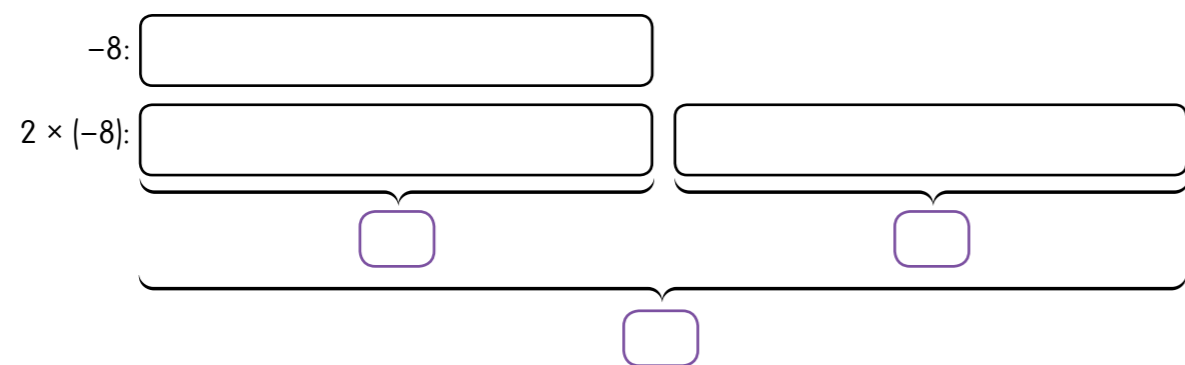
So, $-4 \times (-4) = -[4 \times (-4)] = -(\text{input}) = \text{input}$.

e $(-6) \times (-1)$



So, $-6 \times (-1) = -[6 \times (-1)] = -(\text{input}) = \text{input}$.

f -8×2



So, $-8 \times 2 = \text{input} \times \text{input} = \text{input}$.

3 Solve the following.

a $-6 \times (-7)$

b $-5 \times (-6)$

c $9 \times (-8)$

d $11 \times (-7)$

e -12×7

f -7×10

g -4×6

h $6 \times (-4)$

i $-6 \times (-4)$

i $-4 \times (-6)$

4 Fill in the missing parts.

a $-7 \times \square = -28$

b $-4 \times \square = 36$

c $\square \times 6 = -48$

d $\square \times (-10) = 60$

e $5 \times \square = -55$

f $\square \times (-9) = 63$

g $\square \times -12 = -84$

h $-4 \times \square = 48$

5 Multiply.

a $5 \times (-63)$

b $-38 \times (-91)$

c -21×7

d $14 \times (-801)$

e $-8 \times (-45)$

f -58×1017

6 a What is the product of 7 and the negative of 13?

b What is the product of the negative of 7 and the negative of 13?

7 a What is the product of the negative of 9 and 11?

b What is the product of the negative of 9 and the negative of 11?

* 8 a What is the sum of the negative of the answer to 6a and the answer to 6b?

b What is the difference between the negative of the answer to 7a and the negative of the answer to 7b.

Exercise 5 Division Involving Negative Numbers

1 Multiply the following. Use the discs to help you.

a $-6 \div 2$

-6 :

$-6 \div 2$:

So, $-6 \div 2 = \square$.

b $-6 \div (-2)$

-6 :

$-6 \div (-2)$:

So, $-6 \div (-2) = \square$.

c $-9 \div 3$

-9 :

$-9 \div 3$:

So, $-9 \div 3 = \square$.

d $-10 \div (-2)$

-10 :

$-10 \div (-2)$:

So, $-10 \div (-2) = \square$.

e $-12 \div 4$

-12 :

$-12 \div 4$:

So, $-12 \div 4 = \square$.

f $-12 \div (-4)$

-12 :

$-12 \div (-4)$:

So, $-12 \div (-4) = \square$.

2 Draw in discs to divide the following.

a $-8 \div 4$

-8 :

$-8 \div 4$:

So, $-8 \div 4 = \square$.

b $-8 \div (-4)$

-8 :

$-8 \div (-4)$:

So, $-8 \div (-4) = \square$.

c $-8 \div 2$
 -8 :
 $-8 \div 2$:

So, $-8 \div 2 =$.

d $-8 \div (-2)$
 -8 :
 $-8 \div (-2)$:

So, $-8 \div (-2) =$.

e $-12 \div 6$
 -12 :
 $-12 \div 6$:

So, $-12 \div 6 =$.

f $-12 \div (-6)$
 -12 :
 $-12 \div (-6)$:

So, $-12 \div (-6) =$.

3 Fill in the blanks.

a $-16 \div 4 \Rightarrow$ 4 groups of = -16
 $4 \times$ = -16
So, $-16 \div 4 =$.

b $-16 \div -4 \Rightarrow$ groups of $-4 = -16$
So, $-16 \div (-4) =$.

c $-24 \div 6 \Rightarrow$ 6 groups of = -24
 $6 \times$ = -24
So, $-24 \div 6 =$.

d $-24 \div (-6) \Rightarrow$ groups of $-6 = -24$
So, $-24 \div (-6) =$.

e $-30 \div 10 \Rightarrow$ 10 groups of = -30
 $10 \times$ = -30
So, $-30 \div 10 =$.

f $-30 \div (-10) \Rightarrow$ groups of $-10 = -30$
So, $-30 \div (-10) =$.

g $-20 \div 5 \Rightarrow$ 5 groups of = -20
 $5 \times$ = -20
So, $-20 \div 5 =$.

h $-20 \div (-5) \Rightarrow$ groups of $-5 = -20$
So, $-20 \div (-5) =$.

4 Solve the following.

a $-15 \div 5 =$

b $-20 \div (-4) =$

c $-18 \div (-9) =$

d $-15 \div (-5) =$

e $21 \div (-7) =$

f $-18 \div 9 =$

g $20 \div (-4) =$

h $27 \div (-3) =$

i $-21 \div 7 =$

j $-20 \div 4 =$

5 Fill in the missing parts.

a $-20 \div \square = 2$

b $-20 \div \square = -2$

c $\square \div 9 = -4$

d $\square \div (-12) = 3$

e $48 \div \square = -6$

f $\square \div (-6) = 8$

g $\square \div (-12) = 5$

h $-28 \div \square = -7$

6 Divide.

a $-100 \div (-2) = \square$

b $-168 \div (-4) = \square$

c $-120 \div 4 = \square$

d $-408 \div (-8) = \square$

e $-222 \div (-2) = \square$

f $-357 \div 7 = \square$

- 7 a What is the quotient when -63 is divided by 7 ?
 b What is the quotient when -63 is divided by -9 ?

- 8 a How many groups of -6 are there in -42 ?
 b There are \square groups of -6 in -66 .

Something More Exciting



- A Mark the numbers on a number line and then arrange the following in ascending order:
 (-3) $(\sqrt{10})$ $(\frac{25}{7})$ $(\sqrt[3]{27})$ $(-3\frac{1}{5})$ (-3.7)
- B Solve: $-13 - [-7 + (-15)]$ and $[-6 + (-9)] + [13 - (-22)]$ and then find the difference.
- C Solve: $\{[18 + (-3)] \times 3 + 15\} \div [-6 \times 2 + (-3)]$.
- D If $-2 \leq p \leq 3$ and $-5 < q < -1$, find the
 (i) greatest possible value of $p + q$.
 (ii) smallest possible value of pq .

What Do You Remember?



Fill in the web. You can add in more information if you want.

