

Word Search 1. (BIDMAS).

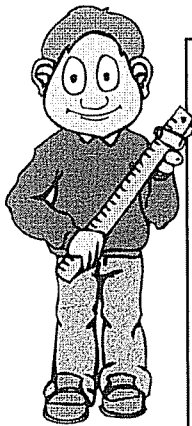


Solve the sum and write the answer in **words** in the space provided.

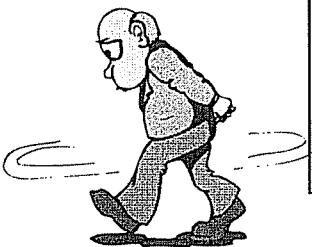
Now search for the words in the answer grid below, the answer may be in any direction!!

The first one has been done for you.

- | | |
|---|---------------------------------------|
| 1). $2 + 3 \times 5 =$ <u>SEVENTEEN</u> | 2). $(2 + 3) \times 5 =$ _____ |
| 3). $9 + 20 \div 4 =$ _____ | 4). $(2 + 3) \times (12 - 5) =$ _____ |
| 5). $(40 + 20) \div 5 =$ _____ | 6). $5 + 8 \times 3 =$ _____ |
| 7). $38 + 12 \div 4 =$ _____ | 8). $(72 + 16) \div 8 =$ _____ |
| 9). $4 + 7 \times 10 - 6 =$ _____ | 10). $9^2 - 5 =$ _____ |
| 11). $9 \times 11 - 16 \div 8 =$ _____ | 12). $48 - 2 \times 7 =$ _____ |
| 13). $90 \div 10 - 1^3 =$ _____ | 14). $(57 - 12) \div 5 =$ _____ |
| 15). $3 + 8^2 - 10 =$ _____ | 16). $4 + 3^2 =$ _____ |
| 17). $(4 + 3)^2 =$ _____ | 18). $56 \div 8 - 9 \div 3 =$ _____ |
| 19). $9^2 + 2^3 =$ _____ | 20). $2 \times 7^2 - 50 =$ _____ |
| 21). $6 \times (13 - 4) =$ _____ | 22). $9 \times (16 - 14)^3 =$ _____ |
| 23). $3^3 + (10 - 4)^2 =$ _____ | 24). $7 + (2 + 4)^2 =$ _____ |
| 25). $(13 - 5)^2 \div 4 =$ _____ | 26). $7 + 3 \times 2 + 10 =$ _____ |
| 27). $78 - 5 \times 9 + 5 =$ _____ | 28). $3^3 - 4 \times 5 =$ _____ |
| 29). $5 \times 9 + 2^4 - 56 \div 7 =$ _____ | 30). $(51 - [3 + 4]^2)^5 =$ _____ |



N	E	I	G	H	T	Y	N	I	N	E	A	R	U	O	F	D	M	L	N
T	U	W	K	T	A	A	E	N	A	U	N	D	L	E	I	R	K	S	E
H	I	E	E	H	F	F	E	K	I	Y	T	I	X	E	F	T	J	I	V
I	T	R	D	G	O	H	T	O	W	N	I	H	N	N	T	Y	G	R	E
R	S	U	C	I	R	D	N	W	E	W	E	Y	H	Y	Y	H	R	T	S
T	I	O	V	E	T	F	E	T	E	R	M	T	S	P	T	O	F	X	R
E	X	F	B	Y	Y	H	V	Y	H	N	B	I	Y	O	H	R	D	C	T
E	T	Y	N	T	T	T	E	T	N	U	T	W	W	S	R	P	O	G	V
N	Y	T	U	R	H	H	S	N	I	E	W	Y	Q	M	E	A	S	F	E
S	T	F	L	O	R	G	A	E	T	I	E	D	T	V	E	V	A	Y	N
T	H	I	O	F	E	I	I	V	P	H	G	T	I	H	H	Z	E	E	O
U	R	F	Q	U	E	E	S	E	E	P	I	F	X	W	R	X	V	N	Y
Y	E	B	W	K	R	Y	D	S	Y	O	Y	R	U	I	E	E	F	U	T
H	E	N	I	N	Y	T	N	E	W	T	S	Z	T	E	S	C	E	Y	R
M	E	R	R	O	H	R	E	O	N	L	X	X	P	Y	L	V	G	F	O
N	E	V	E	L	E	I	H	E	U	A	D	I	T	R	F	B	H	G	F
D	P	N	L	A	M	H	W	P	N	L	F	F	S	D	K	O	J	H	R
E	S	E	V	E	N	T	Y	S	I	X	I	A	A	F	J	N	U	V	Y
S	L	S	Y	S	W	X	E	V	I	F	Y	T	R	I	H	T	K	R	T
P	E	T	H	I	R	T	Y	T	W	O	D	K	Y	G	X	N	I	N	E



Basic Algebra.



1). Expressions.

4 more than t is $t + 4$; 4 less than r is $r - 4$; q more than 2 is $2 + q$; h less than 2 is $2 - h$

For each of the following, write out the expression it represents.

- | | | | |
|------------------------|------------------------|------------------------|------------------------|
| 1). 5 less than h | 2). 6 more than c | 3). p less than 2 | 4). h more than g |
| 5). e more than 2 | 6). 4 less than s | 7). q less than 9 | 8). 4 more than w |
| 9). 5 more than x | 10). y less than 3 | 11). t more than 1 | 12). 7 less than b |
| 13). v more than 8 | 14). 9 less than j | 15). 5 more than e | 16). u less than 10 |
| 17). p less than 6 | 18). g more than 12 | 19). 12 less than m | 20). 8 more than a |
| 21). p more than v | 22). c less than h | 23). k more than b | 24). q less than u |
| 25). k more than g | 26). r more than y | 27). x less than c | 28). u less than p |

2). Substitution 1.

Find the value of the following expressions if $a = 2$, $b = 5$ and $c = 9$.

- | | | | | |
|--------------|---------------|------------------|------------------|------------------|
| 1). $a + 5$ | 2). $b - 1$ | 3). $b + 6$ | 4). $10 - a$ | 5). $c - 4$ |
| 6). $12 + b$ | 7). $10 - c$ | 8). $4 + c$ | 9). $b - 3$ | 10). $12 - a$ |
| 11). $b - 4$ | 12). $c + 10$ | 13). $a + 11$ | 14). $13 - a$ | 15). $14 - b$ |
| 16). $a + b$ | 17). $c - b$ | 18). $b + c$ | 19). $b - a$ | 20). $c - a$ |
| 21). $c + a$ | 22). $b + b$ | 23). $a + b + c$ | 24). $b - a + c$ | 25). $c - b + a$ |

Find the value of the following expressions if $u = 6$, $v = 4$ and $w = 10$.

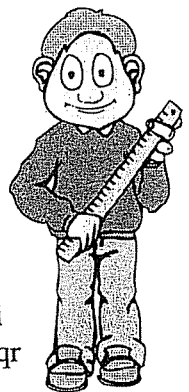
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|---------------|------------------|------------------|------------------|------------------|
| 26). $w - 7$ | 27). $u + 7$ | 28). $v - 3$ | 29). $16 - v$ | 30). $u - 3$ |
| 31). $9 - u$ | 32). $18 + u$ | 33). $15 - v$ | 34). $w + 12$ | 35). $5 + v$ |
| 36). $w + 13$ | 37). $u - 4$ | 38). $9 + v$ | 39). $27 - u$ | 40). $w + 13$ |
| 41). $u + v$ | 42). $w - u$ | 43). $w + u$ | 44). $w - v$ | 45). $u - v$ |
| 46). $w + w$ | 47). $u + v + w$ | 48). $w - u + v$ | 49). $u - v + w$ | 50). $w - u - v$ |

3). Algebra Meanings.

A). $2a$ means $2 \times a$, t^2 means $t \times t$, rt means $r \times t$, $3t^2u$ means $3 \times t \times t \times u$.

Write out the meanings of the following:

- | | | | | |
|--------------|--------------|----------------|----------------|---------------|
| 1). $4r$ | 2). $6y$ | 3). $2w$ | 4). $5q$ | 5). $7g$ |
| 6). $5d$ | 7). $2q$ | 8). $4b$ | 9). $2g$ | 10). $9s$ |
| 11). de | 12). pq | 13). ab | 14). fg | 15). rs |
| 16). yz | 17). mn | 18). hi | 19). cd | 20). st |
| 21). g^2 | 22). t^4 | 23). w^3 | 24). d^6 | 25). b^2 |
| 26). $4st$ | 27). $3de$ | 28). $2pq$ | 29). $6yz$ | 30). $4uv$ |
| 31). $2d^2e$ | 32). $3fg^2$ | 33). $4j^2k$ | 34). $2s^3t$ | 35). $6h^3i$ |
| 36). $5pqr$ | 37). $2def$ | 38). $6u^3v^2$ | 39). $3s^2t^4$ | 40). $2p^2qr$ |



B). $2a \times 3a^2$ can be simplified $2 \times a \times 3 \times a \times a = 2 \times 3 \times a \times a \times a = 6a^3$

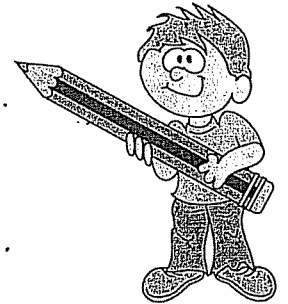
Simplify the following:

- | | | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 1). $2e \times 3$ | 2). $3d \times 4$ | 3). $2w \times 5$ | 4). $5 \times 3d$ | 5). $4 \times 7g$ |
| 6). $2 \times 5d$ | 7). $2q \times 7$ | 8). $6 \times 4b$ | 9). $8 \times 2g$ | 10). $9s \times 5$ |
| 11). $3a \times 4a$ | 12). $2d \times 5d$ | 13). $4b \times 6b$ | 14). $3c \times 6c$ | 15). $7u \times 4u$ |
| 16). $5q \times 7q$ | 17). $6t \times 9t$ | 18). $2w \times 9w$ | 19). $5f \times 6f$ | 20). $9d \times 6d$ |
| 21). $3g \times 2g^2$ | 22). $2t \times 3t^4$ | 23). $5w \times 7w^3$ | 24). $3d^3 \times 4d$ | 25). $3b^2 \times 7b$ |

- 26). $4s \times 5t$ 27). $3d \times 3e$ 28). $2p \times 5q$ 29). $6y \times 5z$ 30). $4u \times 6v$
 31). $2d^2 \times 3e$ 32). $6f \times 4g^2$ 33). $8j^2 \times 4k$ 34). $2s^3 \times 9t$ 35). $6h^3 \times 7i$
 36). $5p^2 \times 7pq$ 37). $2de \times 6d^2$ 38). $6u^3 \times 3uv^2$ 39). $3s^2t \times 3t^4$ 40). $2p^2q \times 5p^3q^2$

4). Substitution 2.

$\frac{1}{2}$ of d or d divided by 2 is usually written $\frac{1}{2}d$ or $\frac{d}{2}$.
 $\frac{3}{4}$ of f is usually written $\frac{3}{4}f$ or $\frac{3f}{4}$.



Find the value of the following expressions if $x = 12$, $y = 8$ and $z = 16$.

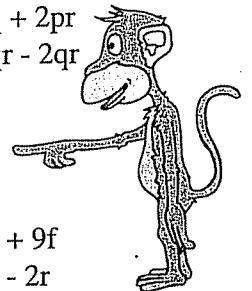
- | | | | | |
|---------------------|---------------------|---------------------|----------------------|--------------------------|
| 1). $2x$ | 2). $3y$ | 3). $2z$ | 4). $5y$ | 5). $3x$ |
| 6). $9y$ | 7). $7x$ | 8). $5z$ | 9). $10y$ | 10). $6x$ |
| 11). $\frac{z}{2}$ | 12). $\frac{x}{3}$ | 13). $\frac{y}{4}$ | 14). $\frac{z}{8}$ | 15). $\frac{x}{4}$ |
| 16). $\frac{3y}{4}$ | 17). $\frac{2x}{3}$ | 18). $\frac{3x}{4}$ | 19). $\frac{5z}{8}$ | 20). $\frac{7z}{8}$ |
| 21). $2x + 4$ | 22). $3y - 4$ | 23). $2z + 9$ | 24). $40 - 4y$ | 25). $35 - 2z$ |
| 26). $20 - 2y$ | 27). $3x - 20$ | 28). $50 - 4y$ | 29). $\frac{x+9}{2}$ | 30). $20 - \frac{3z}{4}$ |

Reminder:

cd means $c \times d$, $3hi$ means $3 \times h \times i$, f^2 means $f \times f$.

Find the value of the following expressions if $p = 3$, $q = 9$ and $r = 5$.

- | | | | | |
|----------------------|-----------------|----------------------|----------------------|------------------|
| 31). pq | 32). q^2 | 33). qr | 34). $2pr$ | 35). $3qr$ |
| 36). $\frac{p^2}{9}$ | 37). $2r^2$ | 38). $\frac{2pq}{3}$ | 39). $\frac{pqr}{3}$ | 40). $4p^2$ |
| 41). $2pqr$ | 42). $3q^2$ | 43). r^3 | 44). $2pr^2$ | 45). q^2r |
| 46). p^3r | 47). q^3 | 48). p^2q | 49). $2p^2r$ | 50). $3p^2qr$ |
| 51). $pq + 3r$ | 52). $4q + pr$ | 53). $7p + qr$ | 54). $pq + qr$ | 55). $pq + 2pr$ |
| 56). $2pq + pr$ | 57). $2pq - qr$ | 58). $3qr - 2pr$ | 59). $6pr - 2pq$ | 60). $pqr - 2qr$ |



5). Collecting Like Terms.

Simplify the following:

- | | | | | |
|---------------------|----------------------|----------------------|----------------------|---------------------|
| 1). $a + a + a$ | 2). $2t + t$ | 3). $2c + 3c$ | 4). $5p + 2p$ | 5). $4f + 9f$ |
| 6). $7u - 3u$ | 7). $6g - 2g$ | 8). $9w - 2w$ | 9). $5y - y$ | 10). $5r - 2r$ |
| 11). $4r + 7r$ | 12). $8h - 3h$ | 13). $7n - 2n$ | 14). $6g + 9g$ | 15). $8u - u$ |
| 16). $7j + 4j$ | 17). $q + 6q$ | 18). $4e - 3e$ | 19). $12k - 7k$ | 20). $16w - 12w$ |
| 21). $d + 2d + 5d$ | 22). $4r + 7r + 8r$ | 23). $9a + a + 6a$ | 24). $6g + 2g + 9g$ | 25). $6y + 3y + 8y$ |
| 26). $7u + 2u + 6u$ | 27). $3w + 6w + 2w$ | 28). $9b + 6b + 8b$ | 29). $4t + 3t - 5t$ | 30). $8p + 6p - 9p$ |
| 31). $9f - 2f + 3f$ | 32). $7y - 6y + 8y$ | 33). $12e + e - 9e$ | 34). $7u - 4u + 2u$ | 35). $2w + 6w - 3w$ |
| 36). $9k - 8k + 5k$ | 37). $13f - 4f - 7f$ | 38). $10s - 4s - 2s$ | 39). $16t - 7t - 8t$ | 40). $9a - a - 5a$ |

Harder !

- | | | | |
|---|---|--|--|
| 41). $2a + 3b + 4a$ | 42). $7v + 2u + 4v$ | 43). $9f + 4g + 2f$ | 44). $7c + 8d + 5c$ |
| 45). $9u - 2u + 6v$ | 46). $5a - 4a + 2b$ | 47). $7j - 4j + 7k$ | 48). $9s - 6s + 3t$ |
| 49). $6f + 9g - 2f$ | 50). $9p + 5q - 2p$ | 51). $7y + 2z - 5y$ | 52). $12d + 5e - 7d$ |
| 53). $7r + 2s + 5r + s$ | 54). $9u + v + 7u + 3v$ | 55). $2d + e + d + 8e$ | 56). $5f + 2g + f + g$ |
| 57). $9p + 2q + 7p + 3q - 4p + 2q + 3p$ | 58). $4s + 9t + 2s + 8t + 9s + 6t + 7s + t$ | 59). $7a + 6b + 2a - 3b + 2a + 3b - 5a - 4b$ | 60). $8f + 7g - 2f - 3g + 4f + 2g - 9f - 5g$ |

Forming Algebraic Expressions.



- 1). A gardener is planting vegetables. He plants m cabbages.
- He plants the same number of leeks as he does cabbages. Write down an expression for the number of leeks planted.
 - He plants 5 more carrots than cabbages. Write down an expression for the number of carrots planted.
 - He plants 2 less cauliflowers than cabbages. Write down an expression for the number of cauliflowers planted.
 - The following year he plants twice as many cabbages. Write down an expression for the number of cabbages planted that year.



- 2). Billy, Benny and Jenny each make a tower of blocks all t blocks high.
- Billy adds 3 blocks to his tower. Write down an expression for the number of blocks in his tower.
 - Benny takes 6 blocks off his tower. Write down an expression for the number of blocks in his tower.
 - Jenny makes **another 2** towers of the same height. Write down an expression for the number of blocks used by Jenny all together.

- 3). In an examination Lauren got x marks.
- Adam got 7 more marks than Lauren. Write down an expression for the number of marks Adam got.
 - Bob got 4 times as many marks as Lauren got. Write down an expression for the number of marks Bob got.
 - Janice got half the marks that Lauren got. Write down an expression for the number of marks Lauren got.

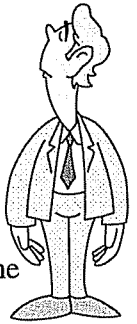
- 4). Inter-Town Rail Services introduce a new carriage for their trains, it can seat r people.
- On the first day of service, 4 carriages are used and each is full. Write down an expression for the number of people the train is transporting.
 - On the second day only 1 carriage is used, and this is only three quarters full. Write down an expression for the number of people the train is carrying that day.

- 5). In a game of tiddley winks, all the counters are kept in bags containing v counters. Alex has 5 bags, Beth has 2 bags, Colin has 7 bags and Deborah has 1 bag.
- Write down an expression for the number of tiddley winks each person has got.
 - Alex loses 9 counters in her games. Write down an expression for the number of tiddley winks she has at the end of all her games.
 - Beth wins 5 counters in her games. Write down an expression for the number of tiddley winks she has at the end of all her games.
 - Deborah loses half her counters in her games. Write down an expression for the number of tiddley winks she has at the end of all her games.

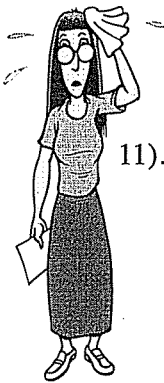


- 6). A large van can hold g parcels for delivery.
- Quickways Ltd. have 7 of these vans. How many parcels can they deliver ?
 - Postage Force have 4 vans, but on Thursday they have to leave 6 parcels behind at the office because all the vans are full. How many parcels were they supposed to deliver that day ?
 - Parcel Ways have 9 of these vans. On Monday the vans aren't all full. They have room for another 15 parcels. How many parcels were they supposed to deliver that day ?

- 7). A man plants 4 packets of tulips. Each packet holds f tulip bulbs. The following day he plants 9 packets of daffodils. Each packet of these packets contains g daffodil bulbs.
- Write down an expression for the number of tulips he planted.
 - Write down an expression for the **total** number of bulbs he planted over the two days.
- 8). An egg producer designs two new boxes. The Chuckie container can hold p eggs, and the Cluck Cluck container can hold q eggs.
- Lynne buys a Cluck Cluck container, and when she gets home finds 4 eggs have been broken, how many whole eggs has she still got ?
 - Margaret buys 4 of the Chuckie containers, how many eggs does she buy ?
 - Malcolm buys one of each container, how many eggs does he buy ?
 - Javaid buys 3 Chuckie containers and 7 Cluck Cluck containers, write down an expression for the number of eggs he buys.
- 9). a). i). A cabbage farmer plants y seeds in a row. He plants x rows of these cabbage seeds. Write down an expression for the number of cabbages he plants.
- ii). The next year he plants **twice** as many seeds, write down an expression for the number of cabbages he plants that year.
- b). i). A carrot farmer plants f seeds in a row. He plants f rows of these carrot seeds. Write down an expression for the number of carrots he plants.
- ii). The next year he plants **half** as many seeds, write down an expression for the number of carrots he plants that year.



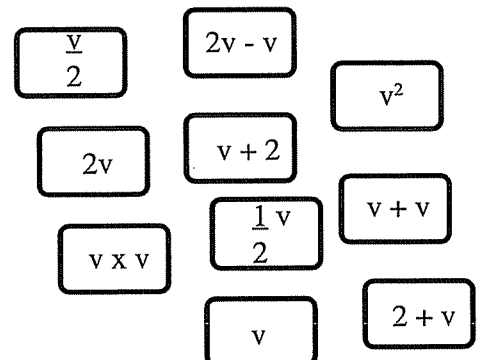
- 10). There are two types of bus in service, the Micro-bus holding h people, and the Macro-bus holding i people.
- Hubble Buses have 16 Micro-buses and 12 Macro-buses. Write down an expression for the maximum number of people they can carry using **all** of their buses.
 - Bubble Buses have 10 Micro-buses and 18 Macro-buses. Write down an expression for the maximum number of people they can carry using **all** of their buses.
 - The two companies merge into one to become Hubble Bubble Buses. Write down an expression for the maximum number of people this new company can carry with the combined fleet of buses.

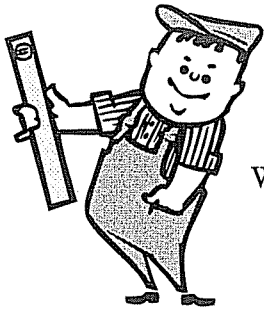


- 11). On the front at Blackpool two companies hire out deck chairs and sun loungers for the day. Both companies charge the same, deck chairs cost £ e to hire and sun loungers £ f .
- Easy-Lie have 420 deck chairs and 136 sun loungers. Write down an expression for the maximum amount of money they can take in one day.
 - Sun-Down have 340 deck chairs and 270 sun loungers. Write down an expression for the maximum amount of money they can take in one day.
 - The two companies merge into one to become Sun-Lie. Write down an expression for the maximum amount of money this new company can make in one day.

- 12). Bobby and Cilla play snap with these algebra cards. Cilla shows Bobby which pairs of cards are the same.
- Write down which cards pair up.
 - Bobby decides 10 cards aren't enough for snap and writes some more. For each card below write out another card that could be its's pair.

- i). $3v + 4v$ ii). v^3 iii). $\frac{1}{4}v$





Perimeters and Algebra.



Write down an equation for the perimeter, P , of each of these shapes.
Leave the answer in its simplest form.

