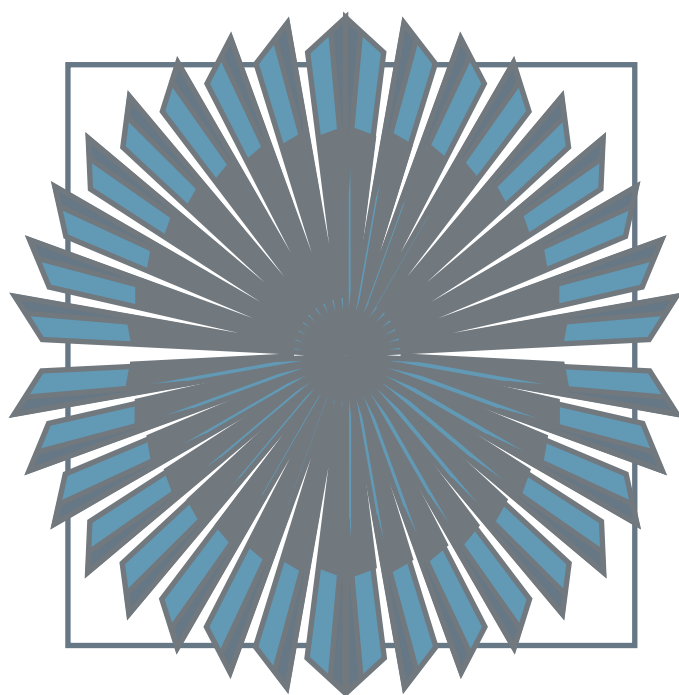


# MATHTRACK

## ANSWERS



Leading  
Educational  
Resources

**S.J.PESCOTT**  
**V.G.CISERA**

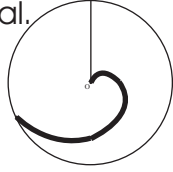
# Mathattack 10 Answers

A number of questions in this worksheet are not suited to in-class correction.

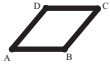
## 1

2 (a) Path is a spiral.

- (b)  
(c) 8 sec.



4 (a)



(b)



(c) RHOMBUS

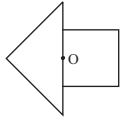
6. OCTAGON,

8 lines of sym.

7.



1.

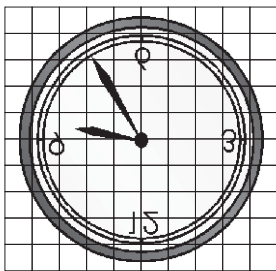


## 2

2. (a)  $180^\circ$  (b)  $120^\circ$   
(c)  $72^\circ$  (d)  $360^\circ$

3. 25, 26, 27, 88

4.

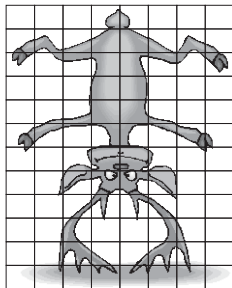


5. ~~OXIDE~~

6. BCHK

7. AHIMOTUVWXY

8.



9. (a) 0 (b) 1 (c) 3

10. EQUIDISTANT

11. (a) 18 (b) 96 (c) 40

12. 1 287 600 km

13. 17 m

14. congruent B & E, F & G  
similar A & C

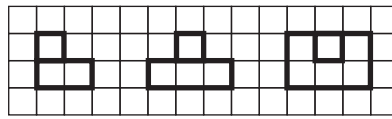
2. (a) 1 (b) 12

(c) 14 faces,  
24 vertices  
36 edges

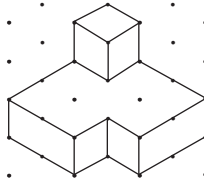
## 3

3.  $14 + 24 - 36 = 2$  yes

4.



5.



6. (a) 125 (b) 1000 (c) 50

7. CONE

8. (a) 24

(b) 6, 2, 2 or 12, 1, 2 etc

9. Square-based pyramid B

Triangular prism C

Tetrahedron A

1. (a)  $180^\circ$  (b)  $900^\circ$

(c)  $144^\circ$  (d)  $60^\circ$

2. (a) anticlockwise

(b)  $10^\circ$  (c)  $24^\circ$  (d)  $192^\circ$

3.

Name of Polygon	Number of sides	Sum of internal angles
Triangle	3	$180^\circ$
Quadrilateral	4	$360^\circ$
Pentagon	5	$540^\circ$
Hexagon	6	$720^\circ$
Heptagon	7	$900^\circ$
Octagon	8	$1080^\circ$

4. (a)  $x = 69^\circ$  (b)  $a = 59^\circ$

(c)  $m = 64^\circ$   $n = 116^\circ$  (d)  $x = 98^\circ$

(e)  $p = 119^\circ$   $q = 61^\circ$   $r = 119^\circ$

(f)  $y = 22.5^\circ$

5.  $a = 108^\circ$   $b = 54^\circ$   $c = 18^\circ$

6.  $p = 110^\circ$   $q = 110^\circ$

$r = 70^\circ$   $s = 70^\circ$

7. 5 revolutions

8.

Angle in decimal degrees	Angle in degrees and minutes
$0.5^\circ$	$30'$
$2.4^\circ$	$2^\circ 24'$
$18.6^\circ$	$18^\circ 36'$
$26.75^\circ$	$26^\circ 45'$
$35.3^\circ$	$35^\circ 18'$
$79.05^\circ$	$79^\circ 3'$

9.  $\theta = 55^\circ 50'$

10. S  $75^\circ$  W

11. (a) B (b) D (c)  $80^\circ$

12. (a)  $15^\circ$  (b)  $0.25^\circ$  or  $15'$

13. 57?

## 5

1. Minor arc H,  
Diameter C,  
Tangent A,  
Major arc J, Radius D,  
Chord E, Major segment G,  
Major sector K,  
Minor segment F,  
Minor sector I  
Circumference B

2.  $12^\circ$

3.  $a = 50^\circ$   $b = 60^\circ$   $c = 70^\circ$

$d = 50^\circ$   $e = 60^\circ$   $f = 70^\circ$

4. angle  $AOC = 100^\circ$ ,  $ABC = 50^\circ$

$$\frac{\angle AOC}{\angle ABC} = 2$$

5. (a)  $x = 90^\circ$  (b)  $a = 39^\circ$

(c)  $b = 110^\circ$  (d)  $y = 88^\circ$

(e)  $m = 50^\circ$  (f)  $v = 60^\circ$

6. (a) F (b) T (c) F (d) T (e) F (f) T

7. circle  $40^\circ$ ,  $80^\circ$ ,  $100^\circ$ ,  $140^\circ$

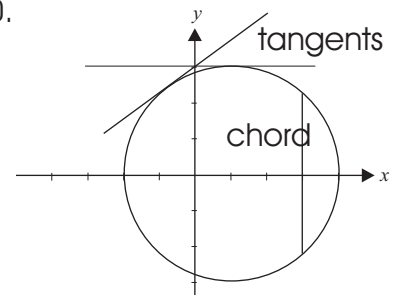
9. (a)  $x = 40^\circ$  (b)  $a = 56^\circ$

(c)  $n = 90^\circ$

(d)  $a = 55^\circ$ ,  $b = 35^\circ$ ,  $c = 35^\circ$

$d = 110^\circ$ ,  $e = 70^\circ$

10.



# Mathattack 10 Answers

## 6

1.

×	3	5	4	1	6	10
7	21	35	28	7	42	70
2	6	10	8	2	12	20
12	36	60	48	12	72	120
9	27	45	36	9	54	90
8	24	40	32	8	48	80
11	33	55	44	11	66	110

2. Three million, seventeen thousand, two hundred and five.

3. 203 057

4. (a) A=9, B=2 and C=1  
(b) F=7 and G=5

5. (a) 
$$\begin{array}{r} 789 \\ \times 27 \\ \hline 5523 \\ 15780 \\ \hline 21303 \end{array}$$
 (b) 
$$\begin{array}{r} 6987 \\ 8 \overline{)55896} \\ \underline{55} \phantom{896} \\ 0 \phantom{896} \\ \underline{0} \phantom{896} \\ 896 \\ \underline{896} \\ 0 \end{array}$$

6. (a) 20 (b) 120 (c) 2300  
(d) 1000

7. (a) 800 (b) 1200 (c) 0 (d) 700

8. 21

9. 13

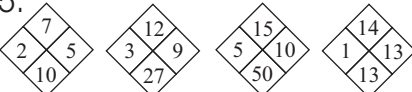
10. 20

11. (a) 16, 22, 29  
(b) 720, 5040  
(c) 78, 101  
(d) 111, 1000

12. (a)  $2 \times 2 \times 2 \times 7$   
(b)  $2 \times 2 \times 2 \times 11$   
(c)  $3 \times 5 \times 7$  (d)  $2 \times 29$

13. There are other solutions.  
(a)  $7 + 17$   
(b)  $2 + 11 + 17 + 13$   
(c)  $2 + 3 + 5 + 7 + 17$   
(d)  $3 + 23 + 29$

14. 53

15. 

16.  $4 \times 17$  and  $2 \times 16$

17. 63

18.

Number	Roman Numeral
19	XIX
92	XCII
657	DCLVII
1666	MDCLXVI

19. 144

20. 400

21. (a) 7 (b) 14 (c) 7 (d) -3

22. There are other solutions.

$$20 = 4^2 + 3 + 1$$

$$30 = (4 + 1)(3 \times 2)$$

$$40 = 4(3^2 + 1)$$

$$50 = (4 + 3)^2 + 1$$

## 7

1.

×	-2	-3	-6	-10	-12	-7
1	-2	-3	-6	-10	-12	-7
9	-18	-27	-54	-90	-108	-63
4	-8	-12	-24	-40	-48	-28
-8	16	24	48	80	96	56
-5	10	15	30	50	60	35
-11	22	33	66	110	132	77

2.

+	-10	4	-12	-2	6	-8
5	-5	9	-7	3	11	-3
-9	-19	-5	-21	-11	-3	-17
7	-3	11	-5	5	13	-1
-3	-13	1	-15	-5	3	-11
-11	-21	-7	-23	-13	-5	-19
3	-7	7	-9	1	9	-5

3. (a) 9 (b) -3 (c) -6 (d) -10 (e) 5

4. (a) -27 (b) 16 (c) 1 (d) -32  
(e) -25 (f) -1

5.

Date	Deposits	Withdrawals	Balance
1/9	-	-	\$100
2/9	\$50		\$150
10/9		\$200	-\$50
12/9		\$50	\$100
20/9	\$300		\$200
21/9		\$250	-\$50
26/9	\$200		\$150
28/9		\$300	\$150
29/9	\$200		\$50

6. (a) Profit (b) \$300

7. 14 km

8. (a) 9 (b) 5 (c) -19  
(d) 3 (e) 4

9.

	Ayeville	Beeville	Ceeville
Minimum	-10	-5	0
Maximum	10	25	20

10. (a) 1169 yrs (b) 2672 yrs  
(c) B  
(d)

Year	Where	Why
1916	BERLIN	WW 1
1940	TOKYO	WW 11
1944	LONDON	WW 11

(e) BC would not be stamped on coin.

1. (a) 5/26 (b) 9/22

2. (a) 1/4 (b) 1/3  
(c) 4/7 (d) 100/1

3. 1/16

4. (a) 12 (b) 3/4 (c) 1/15

5. (a) \$20 (b) \$20.10  
(c) 96 kg (d) 600 km

6. (a) 1/12 (b) 5/4

7. 1/100

8. (a) 3/8 (b) 15

9. 9 m

10. (a) 120 (b) 840

11. 15

12. 13 days

13. FRACTION

14.  $(1/6 + 4/3) \times 4/3 = 2$

15. 243/680

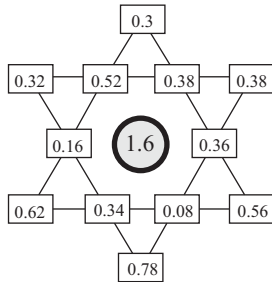
16. NUMERATOR DENOMINATOR

## 8

# Mathattack 10 Answers

## 9

- (a) 2.775  
(b) 10.838
- (a) 8.79 (b) 15.09  
(c) 0.92 (d) 257.00
- (a) 0.64 (b) 5.89
- (a) 7.013 (b) 15  $\frac{3}{13}$
- Three and three-eighths
- (a)  $\frac{7}{10}$  (b)  $3 \frac{3}{200}$
- (a) 275.3 (b) 69.3  
(c) 0.08923
- (a) Max Mono (b) 0.023 s  
(c) 29.349 s (d) 29.419 s



- 30.10
- (a) 0.098, 0.1879, 0.2009, 0.201, 0.21  
(b) 38%,  $0.62^2$ ,  $\frac{2}{5}$ ,  $\sqrt{0.168}$ , 0.42,  $\frac{3}{7}$
- (a) 30 kg (b) 20 kg  
(c) 3500 kg
- 7.8 m
- DECIMATE
- 40 grams
- DECIMAL POINT

## 10

1.

Fraction	Decimal	Percentage
1	0.5	50
$\frac{3}{10}$	0.3	30
$\frac{13}{100}$	0.13	13
1	0.375	37.5
$\frac{7}{100}$	0.07	7
$\frac{1}{500}$	0.002	4

- (a) \$78 (b) \$158.60  
(c) \$14.56
- Maths 75.3% Sc 77.6%  
English 83.2% Tech 75.8%  
Best result - English
- (a) 24 cm by 30 cm  
(b) 225% (c) 250%
- Tiny Tim
- 12 000
- (a) 60% (b) 40%
- (a) 0.3% (b) 150 people

9.

Year	Paynesville	Gainsville
1	9000	4400
2	8100	4840
3	7290	5324
4	6561	5856
5	5905	6442
6	5314	7086

- \$50 000
- 32
- C
- (a)

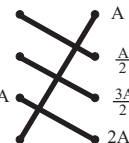
Team	Points for	Points against	Team percentage
St Kilda	254	206	123.3
Essendon	249	215	115.8
Geelong	310	286	108.4
Sydney Swans	275	263	104.6
Freemantle Dockers	257	280	91.8
Adelaide Crows	215	260	82.7

(b) 116.2%

- (a)(i) \$450 (ii) \$630  
(b) \$180  
(c) 40% (d) 12%

## 11

- (a) loss (b) \$50
- (a) 0.375% (b) 0.0875%
- (a) \$42 (b) \$162 (c) \$30  
(d) No - less profit.
- (a) 1.34 (b) 4.36
- 50% of A  
50% increase in A  
100% increase in A  
100% of A



7. Pay As You Go

8.

	Option A	Option B
1 year	5300	5280
2 years	5600	5575.68
3 years	5900	5887.92
4 years	6200	6217.64

Boris should take option B.

- (a) Gross income is income before tax is removed.  
Net income is gross income minus tax.  
(b) Weekly gross \$1158.65  
weekly nett \$663.46
- (a) \$57 960 (b) \$2229.23
- \$27 600
- (a) \$673.08 (b) \$20.19  
(c) 327 weeks

## 12

- Marcus \$2250  
Nicholas \$750
- 500 ha

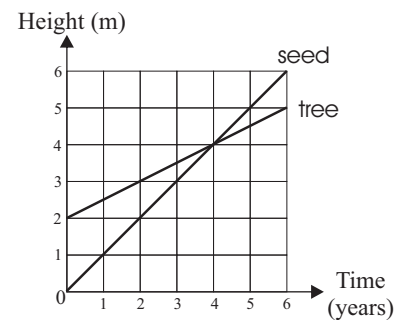
3.

White	Red	Total amount
10 litres	4 litres	14 litres
5 litres	2 litres	7 litres
25 litres	10 litres	35 litres

- Increasing
- A
- (a) \$4.80 (b) \$7.20
- C
- (a) 100 s  
(b) Joshua 500 m  
Darren 300 m  
(c) 5 : 3 (d) 12 times

- 40 s
- 30 s
- 10 mins
- (a) 3 : 2 (b) 100 kg  
(c) wheat flakes 16 mins  
oats 10 mins

- (a) & (b)



(c) 4 yrs

## 13

- \$135.50
- (a) \$3056  
(b) \$58.77
- (a) 120.3 cents (b) 2.5 cents  
(c) 0.3 cents
- (a) Hector (b) 28 s
- Amelia 24 yrs Briony 22 yrs  
Clare 19 yrs Desma 18 yrs
- finches 13 canaries 5  
pigeons 2
- 44 mins 23 s
- 4 boys and 3 girls
- brother's ticket \$12.50  
my ticket \$7.50
- cousin
- (a) 75 s  
(b) 7hrs 23 min 45 s  
(c) 15 nights

# Mathattack 10 Answers

## 14

- (a)  $y^4$  (b)  $a^3b^4$   
(c)  $6m^3n^2$
- (a)  $p^5$  (b)  $6g^5$  (c)  $2x^3y^3$   
(d)  $a^2b^2$  (e)  $x^8$  (f)  $5m^2$  (g)  $2x^3$   
(h)  $4x^6y/3$  (i) 1 (j) 7 (k)  $5x^2$   
(l)  $1/5$  (m)  $x^6$  (n) 1 (o)  $8n^6$   
(p)  $x^8y^{12}$  (q)  $k^7$  (r)  $x^{18}$  (s)  $m^{11}n^7$   
(t)  $p^{10}/q^{15}$  (u)  $x^3/y^4$  (v)  $m^8n^3/2$
- (a)  $1/c^6$  (b)  $3/e^2$  (c)  $1/m^2n$   
(d)  $6v^3/s^2$
- (a)  $x^6/y^{12}$  (b)  $y^9/x^6$  (c)  $m^6/n^4$
- (a) x (b)  $y^{3/4}$  (c)  $g^2$  (d)  $z^2$
- (a) 9 (b) 8 (c) 2 (d)  $1/5$
- (a) 2401 (b) 243 (c) 174

Basic Numeral	Scientific Notation
2 300 000	$2.3 \times 10^6$
0.000 057 9	$5.79 \times 10^{-5}$
9360	$9.36 \times 10^3$
0.000 804	$8.04 \times 10^{-4}$

- (a) 500 s (b)  $9.46 \times 10^{12}$   
(c)  $7.57 \times 10^{17}$
- $3.3 \times 10^{22}$  kg
- $3.3 \times 10^6$
- (a)  $2.9 \times 10^{21}$  (b)  $3.5 \times 10^{25}$

## 15

- (a) 4.12 (b) 3.61  
(c) 7.74 (d) 8.66  
(e) 14.78 (f) 0.71
- 3
- $\frac{1}{3}$  (4)  $\sqrt{5}$   $\frac{\sqrt{5}}{2}$   $\sqrt{-16}$  (1.6)  $\pi$
- (a) F (b) T (c) F (d) T (e) T (f) F
- (a)  $3\sqrt{6}$  (b)  $10\sqrt{10}$  (c)  $7\sqrt{6}$   
(d)  $20\sqrt{3}$  (e)  $3a\sqrt{5}$   
(f)  $6a^2b\sqrt{2a}$
- (a) 6 (b) -10 (c) 7 (d) 0.8
- (a)  $\sqrt{32}$  (b)  $\sqrt{441}$  (c)  $\sqrt{18a^3}$   
(d)  $-\sqrt{720}$
- (a)  $7\sqrt{3}$  (b)  $3\sqrt{5}$  (c)  $-5\sqrt{5}$   
(d)  $4\sqrt{2}$  (e)  $-5\sqrt{7}$
- (a)  $5\sqrt{2}$  (b)  $5\sqrt{7}$  (c)  $7\sqrt{5}$   
(d)  $-31\sqrt{3}$
- (a)  $\sqrt{15}$  (b)  $2\sqrt{15}$  (c)  $10\sqrt{3}$   
(d)  $18\sqrt{10}$
- (a)  $3\sqrt{2} + \sqrt{15}$   
(b)  $6 + 2\sqrt{5}$   
(c)  $6\sqrt{10} - 18\sqrt{15}$   
(d)  $15 - 30\sqrt{2}$
- (a)  $17 + 3\sqrt{6}$  (b) -7

- (a)  $\frac{\sqrt{35}}{7}$  (b)  $\frac{\sqrt{6}}{3}$   
(c)  $\frac{2\sqrt{2} + \sqrt{6}}{2}$

14. RATIONAL

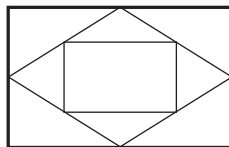
15. There are a number of solutions eg

$1 = \frac{4+4}{4+4}$	$2 = \frac{4}{4} + \frac{4}{4}$
$3 = \frac{4+4+4}{4}$	$4 = \sqrt{4+4+4+4}$
$5 = \sqrt{4 \times 4} + \frac{4}{4}$	$6 = 4 + \sqrt{\frac{4 \times 4}{4}}$
$7 = 4 + 4 - \frac{4}{4}$	$8 = 4 \times 4 - 4 - 4$

## 16

- 71 cm
- 439 cm
- 1 000 000
- (a) 400 (b) 100 microns
- (a) (i) 5 km (ii) 28 m  
(b) 111 m
- 961 hrs
- (a) 500 m (b) 16 cm
- 1:2 000 000
- 450 m
- (a) 695 m (b) 395 revs
- 63 mm
- DESCARTES

- (a)  $40 \text{ cm}^2$   
(b) and (c)



RHOMBUS

- (d)  $10 \text{ cm}^2$  (e) 1 : 4
- D
  - 1200 ha
  - 500 m
  - There are a number of solutions

Length (m)	Width (m)	Area (m <sup>2</sup> )
1200	600	720 000
1000	800	800 000
900	900	810 000
700	1100	770 000

- (a) 12 hrs (b) 8 hrs
- red  $25.1 \text{ m}^2$  blue  $54 \text{ m}^2$   
white  $295.9 \text{ m}^2$
- (a) 20 cm (b)  $1256.6 \text{ cm}^2$   
(c) 21.5%
- (a)  $314.2 \text{ cm}^2$  (b)  $343.2 \text{ cm}^2$   
(c) 21.5%
- $169.7 \text{ m}^2$

## 17

## 18

- (a)  $30 \text{ m}^3$   
(b)  $280 \text{ cm}^3$   
(c)  $12 \text{ m}^3$
- 20 doses
- cube  $V=a^3$  sphere  $V=4\pi r^3/3$   
cyl.  $V=\pi r^2h$  cone  $V=\pi r^2h/3$
- (a) 25 litres (b) 16 cm
- | x | Length | Width | Volume |
|---|--------|-------|--------|
| 2 | 26     | 16    | 832    |
| 3 | 24     | 14    | 1008   |
| 4 | 22     | 12    | 1056   |
| 5 | 20     | 10    | 1000   |
| 6 | 18     | 8     | 864    |

x = 4 cm

- (a)  $56.5 \text{ cm}^3$  (b) 70 scoops
- (a) 1005.3 ml  
(b) 335.1 ml
- B
- 10 glasses
- 212 cones

## 19

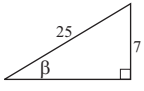
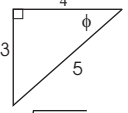
- 8.5 m
- 0.4 m
- 8.5 m
- 8.5 cm
- 8.7 cm
- 7.1 cm
- x = 50.3 cm y = 17 cm
- 26 cm
- 12 cm and 35 cm
- circle 11, 60 and 61
- many solutions
- LS to DP 8km  
DP to PP 6 km

# Mathattack 10 Answers

1. 

Triangle	Side opposite angle $\theta$	Side adjacent angle $\theta$	Hypotenuse
A	x	y	z
B	4	3	5
C	a	c	b

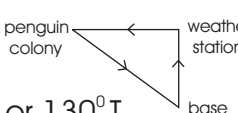
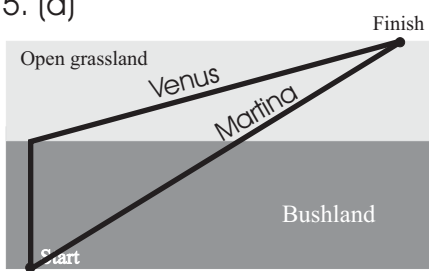
**20**

2. (a)  $5/13$  (b)  $12/13$  (c)  $5/12$   
 3. (a) 41 mm (b) 12 cm  
 4. (a)  (b) 24  
 5.   
 6. (a)  $x=4\sqrt{2}$  (b)  $y=\sqrt{105}$   
 7. (a)  $1/2$  (b)  $a=2, b=\sqrt{3}, \theta=60^\circ$   
 8. (a) 1 (b)  $a=\sqrt{2}, b=1, \theta=45^\circ$   
 9.  $x=16, y=20$   
 10. (a)  $m=2\sqrt{3}, n=4$   
 (b)  $p=3, q=3\sqrt{2}$   
 11. (a)  $15^\circ 30'$  (b)  $57^\circ 6'$   
 12. 

Angle in deg, min, sec	Angle as a decimal
$53^\circ 33' 36''$	$53.56^\circ$
$27^\circ 52' 12''$	$27.87^\circ$

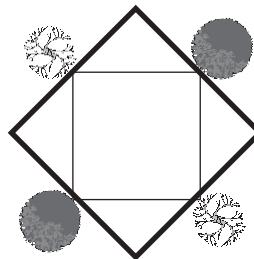
  
 13. (a) 4.4 m (b) 9.8 cm  
 (c) 8.3m (d)  $41^\circ 11'$  or  $41.2^\circ$

1. (a) 2457.5 km  
 (b) 1720.7 km  
 (c) 6hrs **21**

2. (a)   
 (b) S  $50^\circ$  E or  $130^\circ$  T  
 3. (a) 1.6 m (b) 7.7 m  
 4. (a)  $28.0^\circ$  (b)  $75.1^\circ$   
 5. (a)   
 (b)  $84.3^\circ$  (c) 3015.0 m  
 (d) 2009.9 m (e)  $87.7^\circ$   
 (f) 300 m (g) 5004.0 m  
 (h) 

	Time in bushland(s)	Time in grassland(s)	Total time (seconds)
Martina	1507.5	402.0	1909.5
Venus	150	1000.8	1150.8

1. Tracks 1, 3, 4 & 6  
 2. 0.51 sec  
 3. \$2.10  
 4. Grandmother  
 5. 45 min **22**

6.   
 7. 2 hrs  
 8. 2 hrs  
 9. (a) 11 (b) 20  
 10. B  
 11. 

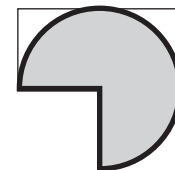
Place	Runner	Time
1	Michelle	11:39
2	Vanessa	11:48
3	Mia	11:49
4	Keren	11:98

  
 12. 5  
 13. DID YOU USE YOUR CALCULATOR?

1. 

Component	Quantity (l)
Passionfruit juice	2.5
Pineapple juice	5
Orange juice	10
Soda water	12.5

**23**

2. (a) 5:00, 5:50, 6:40, 7:30, 8:20 (b) 18  
 3. (a) 40 km (b) 80 kph  
 4. (a) days in a week  
 (b) holes on a golf course  
 (c) seconds in an hour  
 (d) keys on a piano  
 (e) cards in a deck  
 (f) signs of the zodiac  
 (g) degrees in a right angle  
 (h) planets in the solar system  
 5. 30 min  
 6. 180 km  
 7. (a) 50 m/min (b) 10 min  
 8. (i) So it won't fall in the hole.  
 (ii) So it can be easily rolled.  
 9. 20 cm  
 10. (a)   
 (b) 2356 m (c) 1.6 m/min  
 (d) 59 ha (e) 78.5%

1. (a) 20 (b) 5 (c) 15 **24**  
 2. 95 yrs  
 3. 7  
 4. 

1. PARALLEL	5. DIAMETER
2. SYMMETRY	6. CYLINDER
3. DIAGONAL	7. EQUATION
4. FRACTION	8. SOLUTION

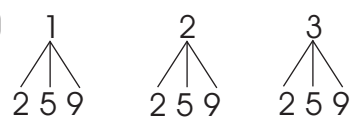
  
 5. + A - C x B ÷ D  
 6. Jasmin 12 min Skye 15 min  
 7. 

\$A	Euro
350	210
900	540

  
 8. 12  
 9. (a) (i) 5 g/l (ii) 200 g/l  
 (iii) 0.4 g/l (b) 16 g/l (c) 5 g/l  
 10. (a) 6 pm Wed  
 (b) 7 am Sun  
 11. 2 : 1

1. (a) (10, 10), (10, 1), (10, 3), (10, 5), (1, 10), (1, 5), (1, 1), (1, 5), (3, 10), (3, 1), (3, 3), (3, 5), (5, 10), (5, 1), (5, 3), (5, 5) **25**  
 (b)  $1/4$  (c)  $7/16$  (d) 25  
 2. (a)  $4/5$  (b) 8  
 3.  $1/1461$   
 4. (a)  $1600 \text{ cm}^2$   
 (b) 

Score	Probability
10	$7/16$
20	$5/16$
50	$3/16$
100	$1/16$

  
 (c)  $1/4$   
 5. (a)   
 (b)  $1/9$   
 6. white 10 green 60 blue 30  
 7. Achey Heads  
 8. BUCKLEY'S CHANCE



# Mathattack 10 Answers

## 32

- (a)  $n^2 - 400$   
(b)  $4x^2 - 9y^2$   
(c)  $81 - p^2$   
(d)  $a^2 - b^2$  (e)  $1 - 16x^2$
- (a)  $(v + w)(v - w)$   
(b)  $(4m + 5n)(4m - 5n)$   
(c)  $(x + 13)(x - 7)$
- (a)  $x^2 + 12x + 36$   
(b)  $y^2 - 14y + 49$   
(c)  $4f^2 - 20fg + 25g^2$   
(d)  $9m^2 + 12mn + 4n^2$
- (a)  $n^2 - 20n + 100$   
(b)  $h^2 + 4h + 4$   
(c)  $9p^2 - 24pq + 16q^2$
- (a)  $y^2 + 8y + 12$   
(b)  $2z^2 + 8z + 8$   
(c)  $3n^2 - 7n - 20$   
(d)  $6c^2 - 11c + 4$
- (a)  $(a + 5)(a + 2)$   
(b)  $(p - 5)(p - 3)$   
(c)  $(t - 10)(t + 2)$   
(d)  $(k + 4)(k - 3)$   
(e)  $(2m + 1)(m + 2)$
- (a)  $x^3 - x^2 - 12x$   
(b)  $y^3 - 5y^2 + 2y + 8$
- $x^2 - 45x + 450$   $(30 - x)(15 - x)$
- 0

## 33

- (a)  $y=5$  (b)  $a=-8$   
(c)  $a=3$  (d)  $m=2$   
(e)  $p=-4$  (f)  $p=5$   
(g)  $y=9$  (h)  $b=3$  (i)  $p=-5$   
(j)  $t=42$  (k)  $x=2.5$  (l)  $y=-11$   
(m)  $d=-1.5$  (n)  $z=1$   $2/3$
- (a)  $x=7$  (b)  $x=4$  (c)  $x=10$   
(d)  $x=-5$
- (a)  $n=6$  (b)  $n=-2$
- (a)  $3(c + 40) = 5c$   
(b) neighbor 60  
conchita 100
- (a) Slava  $x/2$  Jiri  $x/3$   
(b)  $x/3 + 8 = x$   
(c) Radka 12 Slava 6 Jiri 4
- (a) Danielle  $A+20$  Leah  $A-5$   
Lily  $1/2 A$   
(b)  $A + 1/2 A + 2A + 15 = 155$   
(c) Catalina \$40  
Danielle \$60  
Leah \$35  
Lily \$20

## 34

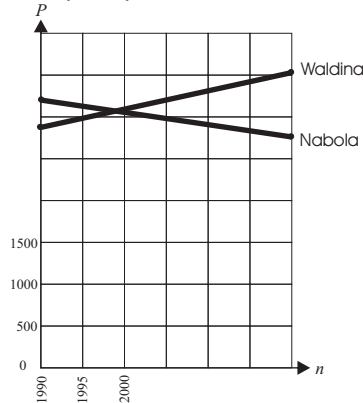
- (a) 

x	-3	-2	-1	0	1	2	3
y	-13	-10	-7	-4	-1	2	5

  
(b) 

m	-3	-2	-1	0	1	2	3
n	11	8	5	2	-1	-4	-7
- (a)  $B=2A+3$  (b)  $d=-3c+4$
- |   |     |     |     |     |     |
|---|-----|-----|-----|-----|-----|
| S | 0   | 100 | 200 | 300 | 400 |
| T | 100 | 150 | 200 | 250 | 300 |

  
 $T=S/2 + 100$
- (a)  $a=50 - 0.5t$   
(b) 45 ha
- (a) (i)  $7.5 \text{ m}^3$  (ii)  $1 \text{ m}^3$   
(iii)  $0.015 \text{ m}^3$  (b) 40 cm  
(c) (i) 8 cm (ii) 50 hrs
- (a)  $P = 2800 + 25n$   
(b) 3550 (c) 1998
- 2825 people
- 8.



Pop. will be equal in 2000

- (a)  $P=9.8d$  (b) 78.4
- (a) 

T	25	24.2	24.0
h	0	100	500

  
(b)  $25^\circ \text{ C}$  (c)  $T=25 - 0.002h$   
(d) 7500 m

## 35

- (a) 

x	-3	-2	-1	0	1	2	3
y	-2	-1	0	1	2	3	4

  
A 

x	-3	-2	-1	0	1	2	3
y	-6	-4	-2	0	2	4	6

  
B 

x	-3	-2	-1	0	1	2	3
y	8	6	4	2	0	-2	-4

  
C
- (b)
- (a)  $m=1$  (b)  $m=-3$  (c)  $m=0$   
(d)  $m=1/2$
- (a)  $m=3$  (b)  $m=-2$   
(c)  $m=-1/3$  (d)  $m=-3/2$
- $y=3x + 2$
5. 

Equation	Gradient	y-intercept
A	3	1
B	0	-3
C	-1	3
D	-5	2
E	1/4	-2
F	3	-12
G	1	4
H	-2	-1
- (a) 

Line	x-intercept	y-intercept	Gradient
A	-2	4	2
B	-3	-4	-4/3
C	4	-4	1
D	2	3	-3/2

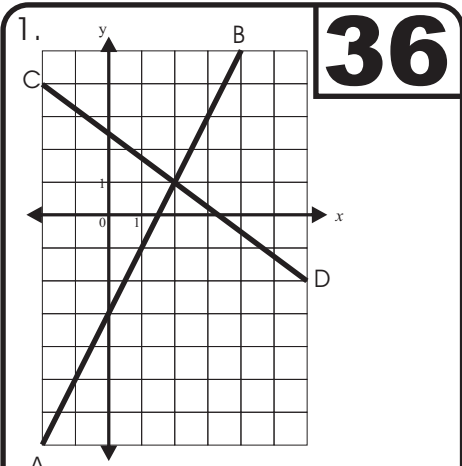
  
(b) 

Line	Equation
A	$y=2x + 4$
B	$y=-4x/3 - 4$
C	$y=x - 4$
D	$y=-3x/2 + 3$
- 1
8. 

Equation	x-intercept	y-intercept
A	0	0
B	6	6
C	-2	6
D	6	-4
- (a) A and D (b) A and E  
(c) C and D (d) E (e) E and F

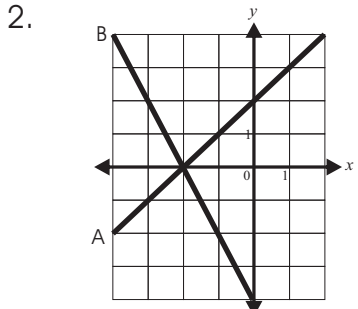


# Mathattack 10 Answers

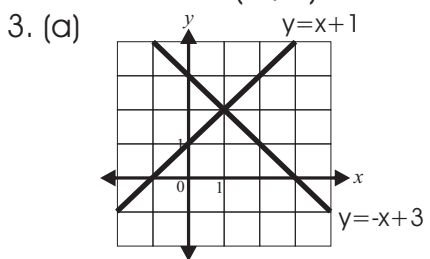


**36**

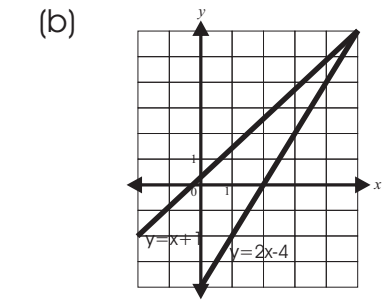
A Intersection at (2, 1)



Intersection at (-2, 0)



Intersection at (1, 2)



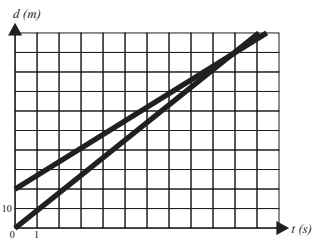
Intersection at (5, 6)

4. (a) (-4, 2) (b) (8, 1) (c) (1, 4) (d) (-2, 3)

5.

t	0	1	2	3	4	5	6
d	0	9	18	27	36	45	54

t	0	1	2	3	4	5	6
d	20	27	34	41	48	55	62



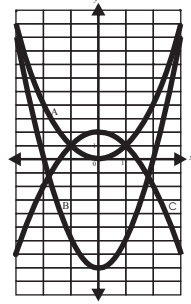
5. (a) Jodie (b) 10 s (c) 90 m  
(d) Jodie  $d=9t$   
Nadine  $d=7t+20$   
(e)  $t=10$   $d=90$

1. **37**

A	x	-3	-2	-1	0	1	2	3
	y	9	4	1	0	1	4	9

B	x	-3	-2	-1	0	1	2	3
	y	10	0	-6	-8	-6	0	10

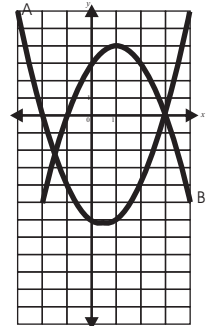
C	x	-3	-2	-1	0	1	2	3
	y	-7	-2	1	2	1	-2	-7



2.

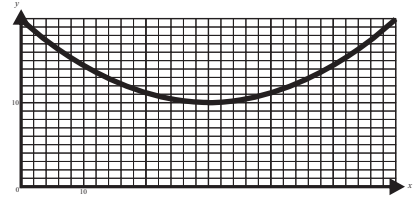
A	x	-3	-2	-1	0	1	2	3	4
	y	6	0	-4	-6	-6	-4	0	6

B	x	-3	-2	-1	0	1	2	3	4
	y	-12	-5	0	3	4	3	0	-5



3.

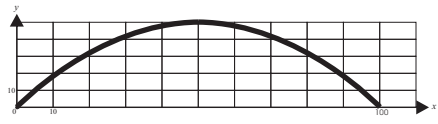
x	0	10	20	30	40	50	60
y	20	14.4	11.1	10	11.1	14.4	20



Lowest point 10 m

4.

x	0	10	20	30	40	50	60	70	80	90	100
y	0	18	32	42	48	50	48	42	32	18	0



(a) 50 m (c) yes

1. (a) 7/11 (b) 1/6  
(c) 31/56 (d) 7x/11  
(e) d/2 (f) 29a/28

2. (a) 5/6 (b) 7/9  
(c) 5m/6 (d) 15n/8

3. (a) (5x-2)/5 (b) (4m-3)/12  
(c) (25p+9)/24

4. (a) 2/t (b) 41/10w  
(c) (6b-5)/6a (d) 21m/5  
(e) (3x-10)/4x  
(f) (15x<sup>2</sup>+14)/35x

5. (a) 1/3 (b) 7/10 (c) 9/16  
(d) 2  
(e) 2x (f) 2x<sup>2</sup>/5

6. (a) (x+3)/2 (b) (x+2)/4  
(c) 1-2m (d) p-5 (e) 6  
(f) 15(2h+1)/2 (g) 2 (h) 3/10  
(i) 2/3 (j) 3/2 (k) 1/4 (l) 1/12  
(m) 5/6 (n) 3(x+4)/10

**38**

1. (a)  $y=x-z$   
(b)  $m=p/3$   
(c)  $u=v-at$   
(d)  $a=(v-u)/t$  (e)  $u=\sqrt{v^2-2as}$   
(f)  $a=(v^2-u^2)/2s$  (g)  $r=2p-q$   
(h)  $l=W/vt$  (i)  $m=p^2/2n$   
(j)  $x=\sqrt{z/y}$

2. (a)  $p=3$  (b)  $v=30$  (c)  $F=30$   
(d)  $v=21.9$  (e)  $a=1$   
(f)  $A=2$  (g)  $F=1$

3. 11.5 cm<sup>2</sup>

4. 6.3 cm

5.  $x=4$  and  $-2.5$

6. (a)  $1.8 \times 10^9$  joules  
(b) 2000 kg

**39**