Upper Elementary

Math Task Cards

Answer Key

ETC MONTESSORI

Upper Elementary Advanced Math

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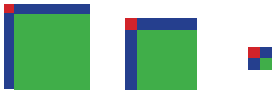
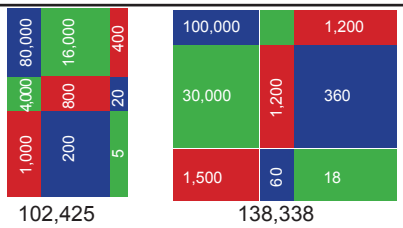
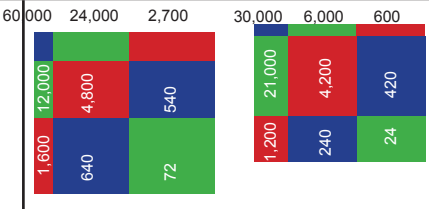
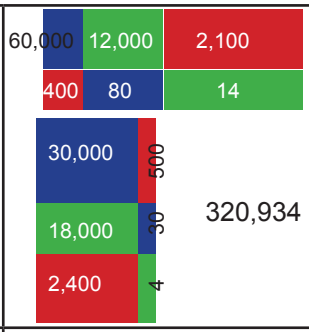
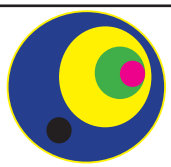
Advanced Math Answer Key

	Left Side of the Card	Right Side of the Card	Application
Multiplication of a Binomial A1	23 x 46 = 1,058	(40 + 6) x (20 + 8) (50 + 9) x (30 + 8) (90 + 3) x (70 + 2) (50 + 2) x (60 + 4) (30 + 3) x (10 + 7)	3) 20 + 20 + 20 = 60
A2	1) 2,294 2) 1,596 3) 1,736 4) 1,817	21 + 35 + 6 + 10 = 72 8 + 2 + 32 + 8 = 50 24 + 12 + 30 + 15 = 81	2) 120 = 5 x 24
A3	1) 17,366 2) 17,353 2) 22,008 4) 23,408	15 +9 + 30 + 18 = 72 32 + 56 + 4 + 7 = 99 45 + 20 + 63 + 28 = 156 48 + 30 + 56 + 35 = 169	1) 74 ÷ 2 = 37
A4	1) 89,831 2) 210,338 3) 25,122 4) 356,400	200 + 40 + 100 + 20 = 360 300 + 10 + 60 + 2 = 372 100 + 40 + 40 + 16 = 196	4) 6 x 7 + 10 = 52
A5	Answers will vary	 100 + 40 + 40 + 16 = 196	1) (250 - 150) ÷ 2 = 50
A6	The partial product is in the lattice. Draw a vertical line from the decimal point through the lattice. Multiply the decimal place values to find the decimal point placement	 324 225 121	3) (148 - 52) ÷ 3 = 32
Drawing a Binomial and a Trinomial A7	A slide rule is a mechanical device used for quick calculations. It is used for x, ÷, functions, and trigonometry. It has been replaced by the calculator.	Answer is given on the card.	8(65 ÷ 5) = 104
A8	1) 5,238 2) 4,239 3) 4,151 4) 3,245	 2,000+120+100+6= 2,226  600+80+240+32= 952	$2.69 (96 ÷ 8) = $32.28
A9	1) 8,292 2) 10,872 3) 43,134 4) 332,442	 1,800+120+60+4= 1,984  800+20+480+12= 1,312	$\frac{2}{3}$ x 12 = 8
A10	1) 90 2) 206	 80,000 16,000 400 4,000 800 20 1,000 200 5 102,425 100,000 1,200 30,000 1,200 360 1,500 60 18 138,338	6(45 x 8) = 2,160
A11	Answers will vary.	 60,000 24,000 2,700 12,000 4,800 540 1,600 640 72 106,352 30,000 6,000 600 21,000 4,200 420 1,200 240 24 63,684	30(30 - 4) ÷ 60 = 13

	Left Side of the Card	Right Side of the Card	Application
A12	Answers will vary.		($8.50 x 2)+($6.75 x 2) =$ 30.50
Square Guides B1	x is a variable, 7 and 9 are numbers + is the operation x = 7	Square guide may remind students of checkerboard, lattice, or Napier's Bones $13^2 = 169$	1) T = C + 5 2) T = K + 7 3) E = K - 3
B2	$x + 8 = 13$ $-8 \quad -8$ $x = 5$	1) $16^2 = 256$ 2) $34^2 = 1,156$ 3) $49^2 = 2,401$ 4) $25^2 = 625$	1) L = 3S 2) C = G + .50 3) S = 2(B-3)
B3	1) 10 = x 2) x = 20 3) 25 = x 4) x = 7 **Mathematical convention usually places the variable to the left of the = sign**	1) $296^2 = 87,616$ 2) $385^2 = 148,225$ 3) $741^2 = 549,081$	2h + (2h + h) + 2(2h +h) = B
B4	1) x = 10 2) x = 4 3) x = 25 4) x = 7	1) $11^2 = 121$ 2) $111^2 = 12,321$ 3) $1,111^2 = 1,234,321$ 4) $11,111^2 = 123,454,321$ 5) $111,111^2 = 12,345,654,321$ 6) $1,111,111^2 = 123,456,7654,321$	s = r + 2r + (3r + 6)
B5	1) x = 6 2) x = 4 3) x = 10 4) x = 6	Binomial Formula $a^2 + 2ab + b^2$	30 = 1/3 g + 1/2 s + d
B6	1) x = 3 2) x = 2 3) x = 7 4) x = 5	$a^2 + 2ab + b^2$ 1) $43^2 = 1,849$ 2) $62^2 = 3,844$ 2) $17^2 = 289$ 4) $28^2 = 784$	(l + 8) + s = 45
B7	1) x = 6 2) x = 4 3) x = 7 4) x = 5	Trinomial Formula $a^2 + 2ab + 2ac + b^2 + 2bc + c^2$	3m + (3m - .5m) + 2(3m) = s
B8	1) x = 7 2) x = 12 3) x = 7 4) x = 3	$a^2 + 2ab + 2ac + b^2 + 2bc + c^2$ 1) $136^2 = 190,096$ 2) $253^2 = 64,009$ 3) $527^2 = 277,729$ 4) $189^2 = 35,721$	3i + (3i + 2i) + i = t
Square Roots C1	Definitions are on the card	Information is on the card	4, 6 6, 8 8, 10 10, 12 12, 14
C2	Definitions are on the card	$\sqrt{25} = 5$ $\sqrt{49} = 7$ $\sqrt{81} = 9$	9, 3 10, 4 11, 5 12, 6 13, 7
C3	0 = whole, integer, rational, real 3.4 = rational, real $\sqrt{28}$ = rational, real 65 = natural, whole, integer,rational, real -5 = integer, rational, real	$\sqrt{53} = 7$ r. 4 $\sqrt{46} = 6$ r.10 $\sqrt{31} = 5$ r. 6	4,8 8,16 16,32 32 64 64,128
C4	53 = natural, whole, integer, real 3/8 = rational, real 2.444 = rational, real -15 = integer, rational, real 18 = natural, whole, integer, rational, real	For every 2 digits in the radicand, there are 1-2 digits in the root.	5,10 13,18 21,26 29,34 37,42
C5	Answers will vary	1) 2 digits 2) 3 digits 3) 4 digits 4) 4 digits 5) 3 digits 6) 3 digits 7) 3 digits 8) 4 digits 9) 5 digits 10) 5 digits	50, 46, 40, 36 30, 26 20,16 10, 6
C6	Answers will vary	Answers will vary.	3, 9 6, 18 9, 27 12, 36 15, 45

	Left Side of the Card	Right Side of the Card	Application
C7	R Q whole N I 	$\sqrt{625}$ = 25	x ÷ 3
C8	1) |6| 2) |4| 3) |0| 4) |x| 5) |x| 6) |x|	$\sqrt{529}$ 23 $\sqrt{1156}$ 34	x^2
C9	Information is on the card	$\sqrt{1764}$ 42	2x + 1
C10	1) 4 2) 10 3) 16 4) 5 5) 16	$\sqrt{576}$ 24 $\sqrt{2601}$ 51	3x -1
C11	1) 8 2) 6 3) 18 4) 1 5) 4	$\sqrt{1089}$ 33 $\sqrt{3844}$ 62	x^3
C12	1) 2 2) 135 3) 67 4) 30 5) 66	$\sqrt{1228}$ 35r.3 $\sqrt{260}$ 16r.4	Information is on the card
C13	1) 66 2) 2 3) 11 4) 102 5) 92	$\sqrt{53361}$ 231r.2 $\sqrt{1228}$ 343	x + (x + 7) + (x + 7 + 6) = 80 3x + 20 = 80
C14	1) 54 2) 34 3) 5 4) 459 5) 144	$\sqrt{181476}$ 426 $\sqrt{99225}$ 315r.3	24 = x + x + (x + 3) 24 = 3x + 3
C15	1) 134 2) 10 3) 4 4) 50 5) 288	$\sqrt{96721}$ 311r.4 $\sqrt{190969}$ 437	x + 2x + 4x = 35 7x = 35
Square Root Algorithm Binomial D1	Answers will vary but could include, negative temperatures, below sea level, or debts.	Answer is on the card.	3x + 10 = 22 x = 4
D2	1) > 2) > 3) < 4) < 5) < 6) <	$\sqrt{4096}$ 64 $\sqrt{3249}$ 57	9x + 1 = 19 x = 2
D3	Answers will vary and could include decimals, or fractions.	$\sqrt{2304}$ 48 $\sqrt{1521}$ 39	4x + 51 = 251 x = 50
D4	1) 4 + 2 = 6 2) 3 - 1 = 2 3) 2 + -1 = 1 4) -4 + 4 = 0 5) -6 + -3 = -9 6) 3 + - 6 = -3	$\sqrt{784}$ 28 $\sqrt{8464}$ 92	4x + 24 = 88 x = 16
Square Root Algorithm Trinomial D5	1) -4 +2 = -2 2) -1 + -5 = -6 3) -6 + 1 = -5 4) -7 + 0 = -7 5) -9 -+ 3 = -6 6) -3 + 6 = 3	Answer is on the card.	x + 8x + 4x = 5850 x = 450
D6	1) 7 + -3 = 4 2) -7 + 3 = -4 3) -3 + 7 = 4 4) -3 + -7 = -10	$\sqrt{398161}$ 631 $\sqrt{187489}$ 433	x + (x + 3) + 2x + 2(x + 3) = 13 x = 9
D7	1) -18.77 2) .8 3) -8.17 4) .69 5) -4.86 6) -26.439	$\sqrt{232324}$ 482 $\sqrt{25281}$ 159	3x + x + (3x + 1) = 15 x = 2
D8	1) -.817 2) -9.8 3) .23 4) .69 5) .94 6) -1.46	$\sqrt{127449}$ 357 $\sqrt{970225}$ 985	x + 4x + (4x -1) = 17 x = 2
D9	Answers will vary and could include decimals, or fractions.	$\sqrt{567009}$ 753 $\sqrt{66564}$ 258	x + (x + 1) + (x + 2) = 114 x = 37
D10	Answers will vary and could include decimals, or fractions.	$\sqrt{273529}$ 523 $\sqrt{660969}$ 813	x + (x + 2) + (x + 4) = 159 x = 51

	Left Side of the Card	Right Side of the Card	Application
D 11	Answers will vary.	$\sqrt{625}$ = 25 $\sqrt{1849}$ = 43	Answer is on the card
D12	Answers will vary.	$\sqrt{1156}$ = 34 $\sqrt{324}$ = 18	1) x = 5 2) x = 6 3) x = 4 4) x = 3
D 13	Answers will vary.	$\sqrt{15625}$ = 125 $\sqrt{53361}$ = 231	1) x = 7 2) x = 4 3) x = 1 4) x = 2
D 14	Answers will vary.	$\sqrt{119025}$ = 345 $\sqrt{271441}$ = 521	1) x = 2 2) x = 1 3) x = 1 4) x = 7
Special Cases **E 1**	Answer is on the card.	Answer is on the card	1) x = 6 2) x = 6 3) x = 8 4) x = 5
E 2	Answers will vary.	$\sqrt{360000}$ = 600 $\sqrt{250000}$ = 500	1) x = 4 2) x = 6 3) x = 5 4) x = 1
E 3	Answers will vary.	$\sqrt{396900}$ = 630 $\sqrt{102400}$ = 320	1) x = 6 2) x = 10 3) x = 10 4) x = 5
E 4	Answers will vary.	$\sqrt{92416}$ = 304 $\sqrt{251001}$ = 501	1) x = 6 2) x = 4 3) x = 2 4) x = 0
E 5	1) commutative + 2) identity x 3) associative x 4) identity x 5) distributive 6) identity +	$\sqrt{163218}$ = 404r2 $\sqrt{256039}$ = 506r3	1) x = 6 2) x = 7 3) x = 0 4) x = 3
E 6	1) commutative + 2) distributive 3) associative + 4) identity x 5) associative + 6) commutative +	$\sqrt{644810}$ = 803r1 $\sqrt{42853}$ = 207r4	x + 2x = x + 14, x = 7 1) 7 2) 14 3) 21
E 7	1) identity + 2) distributive 3) commutative x 4) distributive 5) associative x 6) commutative +	$\sqrt{10246401}$ = 3201	x + 21 = 4x + 3, x = 6 27 days
E 8	Bones Card Game	$\sqrt{20268004}$ = 4502	3x + 4 = 2x + 10 x = 6 $22
E 9	Bones Card Game	$\sqrt{36240400}$ = 6020	x + 3x - 2x +7 = x + 15 x = 8 inches
Squares to Cubes **F 1**	1) -3 2) -5 3) -20 4) -12	46,656 3,125 81 256	Answer is on the card
F 2	1) -11 2) -2 3) -8 4) -25	7 19 37 61 91	x =9 Math = 3 Language = 9 Cultural = 5
F 3	1) + 9 2) +13 3) +10 4) + 17	127 169 217 271	x =20 Lettuce = 20 Carrots = 5 Beans = 3
F 4	1) -5 2) +11 3) +40 4) -0.6 5) 10.373 6) 35.0823 When subtracting a negative the 2 negative signs result in addition.	10[(10x10)+(4x10)+(10x4)+(4x4)] + 4[(10x10)+(4x10)+(10x4)+(4x4)] = 2744	x = 6 Mon. = 3 Tues. = 6 Wed = 2
F 5	A and E, D and G H and C F and B	$3^3 + 3(3^2) + 3(3^1) + 1^3 = 64$ $6^3 + 3(6^2) + 3(6^1) + 1^3 = 343$ $8^3 + 3(8^2) + 3(8^1) + 1^3 = 729$	x = 4 Joaquin = 2 John = 4
F 6	Copy symbols on the card.	$5^3 + 3(5^2) + 3(5^1) + 1^3 = 216$ $4^3 + 3(4^2) + 3(4^1) + 1^3 = 125$ $7^3 + 3(7^2) + 3(7^1) + 1^3 = 512$	x = 8 Peter = 5 Parker = 2 Doris = 1
F 7	1) x > -1 2) x ≤ 22 3) x < 9 4) x ≥ -8 5) x > 40	$4^3 + 3(4^2x3) + 3(3^2x4) + 3^3 = 343$ (Binomial cube, numerically)	x = 9 Ms. Arbiter = 5 Ms. Jodi = 3 Ms. Olga = 11

	Left Side of the Card	Right Side of the Card	Application
F 8	1) $x \geq -5$ 2) $x < 8$ 3) $x > -2$ 4) $x \geq 19$ 5) $x < 90$	$4^3 + 3(4^2x3) + 3(3^2x4) + 3(4^2x2) +$ $6(4x3x2) + 3^3 + 3(3^2x2) + 3(4x2^2) +$ $3(3x2^2) + 2^3 = 729$ (Trinomial cube, numerically)	x = 5 minute 1 = 8 minute 2 = 3 minute 3 = 1
F 9	1) $x>3$ 2) $y \geq -1$ 3) $z \leq 14$ 4) $x \geq 17$ 5) $y>-24$ 6) $z \geq 1$	$2^3 + 3(2^2x4) + 3(4^2x2) + 4^3 = 216$ $3^3 + 3(3^2x5) + 3(5^2x3) + 5^3 = 512$ $5^3 + 3(5^2x4) + 3(4^2x5) + 4^3 = 729$	x = 12 card game apps 12
F 10	1) $z>-18$ 2) $a<7$ 3) $b \leq -13$ 4) $c<-20$ 5) $p>0$ 6) $b<8$	$3^3 + 3(3^2x3) + 3(3^2x3) + 3^3 = 216$ $4^3 + 3(4^2x4) + 3(4^2x4) + 4^3 = 518$ $7^3 + 3(7^2x2) + 3(2^2x7) + 2^3 = 729$	x = 9 grasshoppers = 3 ladybugs = 9 crickets = 5
Cube Roots **G 1**	1) 3 2) -2 3) 4 4) -4	For every three digits in the radicand, there will be one digit in the root.	x = -5
G 2	Answer is on the card	Answer is on the card	x = 48
G3	1) -4 2) +8 3) +3 4) -5 5) +2 6) -3	Answer is on the card	x = -6
G 4	1) -18.2 2) -2 3) +2.813 4) -22.7272 5) -52 If the signs are the same the answer is positive, if they are different the quotient is negative.	$\sqrt[3]{148877} = 53$ $\sqrt[3]{438976} = 76$	Elsie = 613 gallons Bossie = 851 gallons
G 5	1) -24 2) -69 3) -19.2 4) -3 5) -27.52 6) -22.5	$\sqrt[3]{262144} = 64$ $\sqrt[3]{50653} = 37$	x = 19 inches
G 6	Answer is on the card.	Teacher lesson	54 students in each bus
G 7	1) -160 2) -6 3) -9.46 4) -.1323 5) -3/8 6) -.125 A positive x negative = negative	Answer is on the card.	82 games
G 8	Answer is on the card.	$\sqrt[3]{71991296} = 416$	She painted for 4 hours
G 9	1) 14 2) 555 3) 2.812 4) 479.37 5) 3½ 6) .1875	$\sqrt[3]{43614208} = 352$	215 subscriptions
G 10	1) 13,608 2) -840 If the number of negatives is odd the product is negative. If the number of negatives is even, the product is positive.	$\sqrt[3]{12977875} = 235$	9 years old
Alternative Bases **H 1**	1) 4 2) 9 3) 120 4) 50	1,2,3,10,11,12,13,20,21,22,23, 30,31,32,33,100,101,102,103,110	Answer is on the card.
H 2	1) \$18 \$54 2) \$6.45 \$49.45	1) 389_{10} 2) 21_{10} 3) 179_{10} 4) 26_{10}	42.5 hours
H 3	1) 360 ft² 1,560 ft² 2) 6 days (and a little more)	1) 954_{10} 2) 493_{10} 3) 488_{10} 4) 152_{10}	240 words in 30 minutes
H 4	1) 6 coconuts 2) 24 problems	1) 373_{10} 2) 41_{10} 3) 333_{10} 4) 70_{10}	35 defective parts
H 5	1) 12 pages 48 pages 2) 21 boxes	1) 4134_5 2) 5545_6 3) 1001_2 4) 1010_4	300 miles

	Left Side of the Card	Right Side of the Card	Application
H 6	1) 20 pages 2) 20 tasks	1) 11120_3 2) 10220_7 3) 675_8 4) 2014_5	2 hours 27 minutes
H 7	1) $35 $42 2) $50	1) 10100_2 2) 7220_9 3) 677_8 4) 1005_6	100 tablets
H 8	1) 4 days 2) 15 gallons of paint	1) 11120_3 2) 10220_7 3) 675_8 4) 2014_5	4320 women students
H 9	1) $488.88 2) $1333.33	1) 13021_4 2) 10002_7 3) 4787_9 4) 20_3	$18.45
H 10	1) 88 books 2) 20 children	1) 12421_5 2) 202011_3 3) 224202_6 4) 134026_7	129 inches 10 ft 9 in

H 11	1) 33% 2) 25%	1) 10_{10} 2) 15_{10} 3) 16_{10} 4) 20_{10}	$8.66
H 12	1) 60% 2) 69%	1) 14_{10} 2) 11_{10} 3) 14_{10} 4) 19_{10} 5) 28_{10} 6) 12_{10}	24 minutes
H 13	1) 57% 2) .2%	1) 9B 6 5_{12} 2) 1 5 6 3_{16} 3) 2 0 6_{14} 4) 3 7 7 $9B_{13}$	$2,388 in 2 months
H 14	1) 44% 2) approximately 19%	1) 9A 3 9_{11} 2) 9D 0 $9B_{15}$ 3) 1 8 5_{16} 4) 3 3 2_{12}	2310 miles

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979 Reseda Dr.
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