



## Multi Base Bead Math Task Cards

Teacher's notes and Answer Key





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# Answer Key

Card	Answers
Card 1	The only digit that could be used for base one is a zero. Additionally, one raised to any power equals 1.
Card 2	$232013_4 = (2 \times 4^5) + (3 \times 4^4) + (2 \times 4^3) + (0 \times 4^2) + (1 \times 4^1) + 3$ $450662230_7 = (4 \times 7^8) + (5 \times 7^7) + (0 \times 7^6) + (6 \times 7^5) + (6 \times 7^4) + (2 \times 7^3) + (2 \times 7^2) + (3 \times 7^1)$
Card 3	$10002102211_3 = (1 \times 3^{10}) + (2 \times 3^6) + (1 \times 3^5) + (2 \times 3^3) + (2 \times 3^2) + (1 \times 3^1) + 1$ $132130413240_5 = (1 \times 5^{11}) + (3 \times 5^{10}) + (2 \times 5^9) + (1 \times 5^8) + (3 \times 5^7) + (4 \times 5^5) + (1 \times 5^4) + (3 \times 5^3) + (2 \times 5^2) + (4 \times 5^1)$ $42103524_6 = (4 \times 6^7) + (2 \times 6^6) + (1 \times 6^5) + (3 \times 6^3) + (5 \times 6^2) + (2 \times 6^1) + 4$ $1050031473_8 = (1 \times 8^9) + (5 \times 8^7) + (3 \times 8^4) + (1 \times 8^3) + (4 \times 8^2) + (7 \times 8^1) + 3$
Card 4	$1022_3 = 27 + (2 \times 3) + 2 = 35_{10}$ $310211_4 = (3 \times 1024) + 256 + 16 + 4 + 1 = 3365_{10}$ $10111011_2 = 128 + 32 + 16 + 8 + 2 + 1 = 187_{10}$ $3200112_5 = (3 \times 15,625) + (2 \times 3,125) + 25 + 5 + 2 = 53,157_{10}$
Card 5	$4721_9 = (4 \times 729) + (7 \times 81) + (2 \times 9) + 1 = 3502_{10}$ $20075 = (2 \times 4,96) + (7 \times 8) + 5 = 8,253_{10}$ $53021_6 = (5 \times 1,296) + (3 \times 216) + (2 \times 6) + 1 = 7,141_{10}$ $3102_5 = (3 \times 125) + (25) + 2 = 402_{10}$
Card 6	$32_{10} = 52_6$ $95_{10} = 164_7$ $241_{10} = 287_9$ $2530_{10} = 40110_5$
Card 7	Record quantities in base 16
Card 8	$2C81016A_{13} = (2 \times 13^7) + (12 \times 13^6) + (8 \times 13^5) + (1 \times 13_4) + (1 \times 13^2) + (6 \times 13^1) + 10$ $80C6BA_{14} = (8 \times 14^5) + (13 \times 14^3) + (6 \times 14^2) + (11 \times 14^1) + 10$ $6A81896B_{12} = (6 \times 12^7) + (10 \times 12^6) + (8 \times 12^5) + (1 \times 12^4) + (8 \times 12^3) + (9 \times 12^2) + (6 \times 12^1) + 11$ $2035AE96C_{16} = (2 \times 16^8) + (3 \times 16^6) + (5 \times 16^5) + (10 \times 16^4) + (14 \times 16^3) + (9 \times 16^2) + (6 \times 16^1) + 12$
Card 9	$480A82_{12} = (4 \times 248,832) + (8 \times 20,376) + (10 \times 144) + (8 \times 12) + 2 = 1,159,874$ $5227B9A_{13} = (5 \times 4,826,809) + (2 \times 371,293) + (2 \times 28,561) + (7 \times 2,197) + (11 \times 169) + (9 \times 13) + 10 = 24,951,118$ $80355EEA_{15} = (8 \times 11,390,625) + (3 \times 759,375) + (5 \times 50,625) + (5 \times 3,375) + (14 \times 225) + (14 \times 15) + 10 = 1,369,426,495$ $CABBED_{16} = (12 \times 1048576) + (10 \times 65,536) + (11 \times 4096) + (11 \times 256) + (14 \times 16) + 13 = 13,286,381$
Card 10	$362004_{10} = 1555B0_{12}$ $97822_{10} = 6754A_{11}$ $1002453_{10} = 14C053_{15}$ $78300_{10} = 29841_{13}$
Card 11	$244432_5$ $467754_8$ $23446265_7$ $22112_3$
Card 12	$304BBB_{12}$ $5DDEDB_{15}$ $AACCBE_{16}$ $B24AAC_{13}$
Card 13	$3341400_5 = 58975_{10}$ $22445740_9 = 10895508_{10}$ $22022012_3 = 6053_{10}$ $12526662_7 = 1150074_{10}$
Card 14	$1566378_{14} = 10466310_{10}$ $1597A23_{11} = 2719137_{10}$ $15B963D_{16} = 22779453_{10}$ $192978_{13} = 634356_{10}$

Card	Answers
Card 15	11255 <sub>8</sub> 22564 <sub>7</sub> 23430 <sub>6</sub> 7058 <sub>9</sub>
Card 16	B8849A <sub>13</sub> 899A <sub>11</sub> 85208A <sub>12</sub> EADA31 <sub>15</sub>
Card 17	1AE346 <sub>16</sub> = 1762118 <sub>10</sub> 53531 <sub>9</sub> = 35425 <sub>10</sub> 2111 <sub>5</sub> = 281 <sub>10</sub> 241697 <sub>11</sub> = 382829 <sub>10</sub>
Card 18	32C376 <sub>14</sub> = 1723924 <sub>10</sub> 273553 <sub>9</sub> = 166665 <sub>10</sub> 31167C <sub>13</sub> = 1145754 <sub>10</sub> 1 <sub>2</sub> = 1 <sub>10</sub>
Card 19	120100 <sub>3</sub> 317761 <sub>8</sub> 300002 <sub>6</sub> 11BC2 <sub>13</sub>
Card 20	203213 <sub>4</sub> 6365823 <sub>9</sub> 7298 <sub>12</sub> 3AB6 <sub>15</sub>
Card 21	4463715 <sub>9</sub> 23221023 <sub>4</sub> 60A89A5 <sub>13</sub> 12221023 <sub>12</sub>
Card 22	354053 <sub>6</sub> 4069DC8 <sub>14</sub> 30223615 <sub>7</sub> 66B2Bo <sub>15</sub>
Card 23	5696730 <sub>11</sub> 14510062 <sub>8</sub> 1211333 <sub>4</sub> 5095544 <sub>13</sub>
Card 24	7ECCD3D <sub>16</sub> 26656334 <sub>9</sub> 8B7498BA <sub>12</sub> 30241234 <sub>6</sub>
Card 25	1001111011 <sub>2</sub> = 1,275 <sub>10</sub> 225166625412 <sub>7</sub> = 4,732,891,536 <sub>10</sub> 4CB49365101 <sub>14</sub> = 1,421,676,138,653 <sub>10</sub> 321163072617 <sub>8</sub> = 28,081,681,807 <sub>10</sub>
Card 26	200202020011 <sub>3</sub> = 369,040 <sub>10</sub> 202312440303 <sub>5</sub> = 102,858,828 <sub>10</sub> 3CAC3C485B69 <sub>13</sub> = 7,146,864,740,531 <sub>10</sub> 4BAE56BBD25 <sub>15</sub> = 2,757,561,559,460 <sub>10</sub>
Card 27	2490633115 <sub>8</sub> × 561 <sub>8</sub> = 42,153,549 <sub>10</sub> 9557A9975 <sub>11</sub> = 2036810506 <sub>10</sub> 231303312 <sub>5</sub> = 5205411 <sub>10</sub>
Card 28	B8B5064C60 <sub>14</sub> = 24,027,5267,204 <sub>10</sub> 3077555731 <sub>9</sub> = 1199794627 <sub>10</sub> 2546732DC00 <sub>15</sub> = 1356876457200 <sub>10</sub>



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